

THE IRON AGE

THURSDAY, MARCH 26, 1891.

Rapid Transit for New York.

The agitation over the necessity of more and better rapid transit for New York has brought out many conflicting plans, and yet there has been very little cool-headed expert discussion on the problems at issue. The public has been pretty effectually drilled into the conviction that an underground electric road is likely to be the most acceptable. A review of the situation presented by that eminent authority, Theodore Cooper, in the columns of the *Railroad Gazette* gives little hope that such a system will pay. Mr. Cooper summarizes his views in the following manner:

From the preceding considerations, it would appear that the future of true rapid transit, for the people of New York, which we would define as a comfortable and rapid transfer from one part of the city to

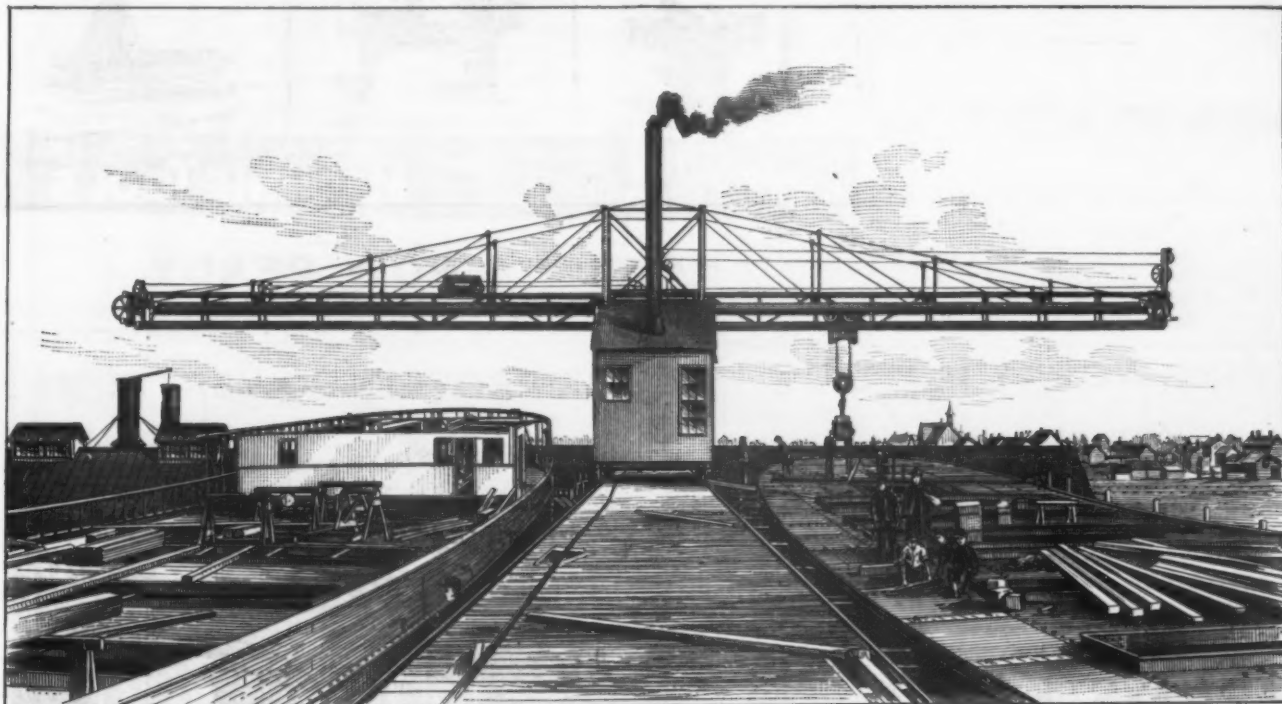
5. Public opinion must be changed so as to permit the extension and increase of the elevated railroad system, as the only system likely to furnish us with the better accommodations and also make a proper return to the investors.

The Chicago Shipbuilding Company.

We have the pleasure of presenting herewith a ground plan and photographs of the ship yard of the Chicago Shipbuilding Company at South Chicago, showing the portion of the plant already finished, as well as the general arrangement of the remainder, on which construction is soon to commence. When all completed, it is considered that this will be one of the leading ship and engine building plants in the whole country, the buildings being of ample size for the

shops, and small machine shops, all on the ground floor. Above the plate shop is a second story with a mold loft having a clear floor 200 x 50 feet, and a pattern shop 40 x 50 feet. The molds are shaped and bored by power tools. The other shops are fitted with powerful and modern machinery, rolls, punches, shears, &c. A rivet machine makes all the rivets, bolts, &c., used in the yard.

The steel comes into the yard over a side track from the Calumet River Railroad, a branch of the Pennsylvania system. The plates are unloaded from the cars by a traveling crane of 62 feet span, a view of which is shown, and stacked on edge. Any plate can then be hoisted out and delivered to the laying out tables inside the shop at any point in its length, without disturbing the others. The arrangement is novel and in practical work-



CANTILEVER DERRICK.—CHICAGO SHIPBUILDING COMPANY.

another, at the cost of five cents per passenger, for all distances, is not a bright one. It is not necessary to add to our difficulties by considering the trouble and expense of ventilation for any subway system, nor the problem of warming the cars on lines operated solely by electricity, without using the car stove. That we must have more rapid transit, and will have it by some means or other, is certain. If capitalists will not be philanthropic and build and operate for us a system without expecting a suitable return in earnings, we have the following alternatives:

1. The road must be built and operated by the city with solely an expectation (or certainty) of a suitable return in the increased value of taxable property.

2. And which applies more particularly to roads above the surface, the city must assume all damages or cost for real estate, depending again upon the increased values created by such routes as an offset.

3. The city must make up any deficit due to the operations of any new systems.

4. The law must make provision for an assessment of betterments and awards for damages or loss.

heaviest work, with large storage ground for material, yet compactly and conveniently arranged so that handling will be reduced to a minimum.

The yard is situated on the East bank of the Calumet River, about 1 mile from its mouth and extending from 100th to 102d streets. The ground is of about 21 acres in extent, with a river frontage of over 1400 feet. The Calumet is here 225 feet wide, with a channel maintained to a depth of 16 feet by the United States Government. At the south end of the property three slips each 400 feet long by 100 feet wide have been excavated to a depth of 12 feet of water, giving six building berths. The southern slip, on account of the angle in the river is intended to be made into a dry dock at an early day, its larger side giving room for the pump houses without interfering with the building berth on that side. Across the heads of these slips, equally convenient and accessible to all the berths, stretches the main building, 570 feet long by 75 feet wide, containing the boilers and shop engines, heating furnaces and bending slabs, blacksmith shop, plate and angle

ing most satisfactory. Inside the shop, by cranes and overhead tracks, the plates pass from tool to tool, never returning over the same ground, and from the countersinkers on the river side are delivered to the narrow-gauge cars, which carry them to the building berths. Between berths Nos. 2 and 3, running on elevated tracks 30 feet above the ground, is a powerful steam cantilever derrick of 120 feet span, which delivers each plate, beam or angle to its appointed place on the ship at either side. This machine, a view of which is also shown, was built by the Brown Hoisting and Conveying Machine Company of Cleveland, Ohio, and is one of the most novel and useful tools ever put into a shipyard. Its capacity being a weight of 10 tons, 30 feet out from the center, it is intended to put in the engines of the ships with it before launching, and this has been done in the case of the two ships now nearly completed; in fact, the uses of a machine of this kind, by those familiar with shipbuilding, are seen to be almost endless.

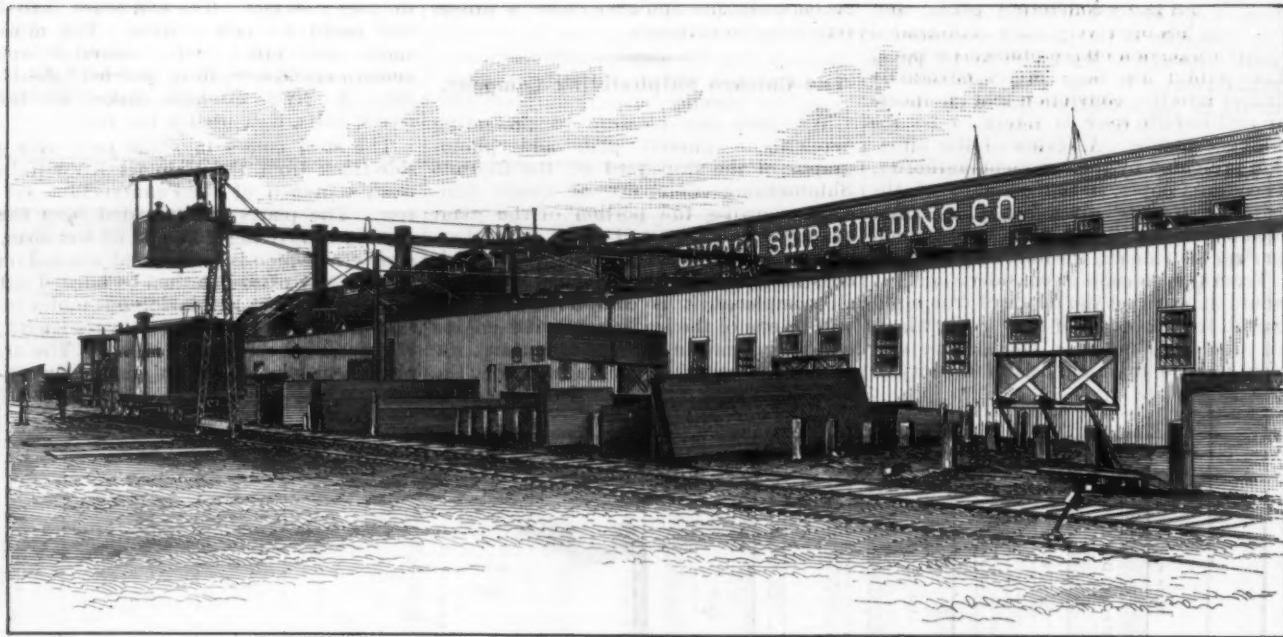
The joiner shop and saw mill, at the other end of the yard, have a complete

outfit of wood working machinery, driven by a separate engine and boiler. The steamers Marina and Masaba, now under construction, and the former of which was launched on the 14th inst., are owned by the Minnesota Steamship Company, and intended for the Lake Superior iron ore trade. They are 292½ feet long on the keel, 310 feet over all, 40 feet beam, and

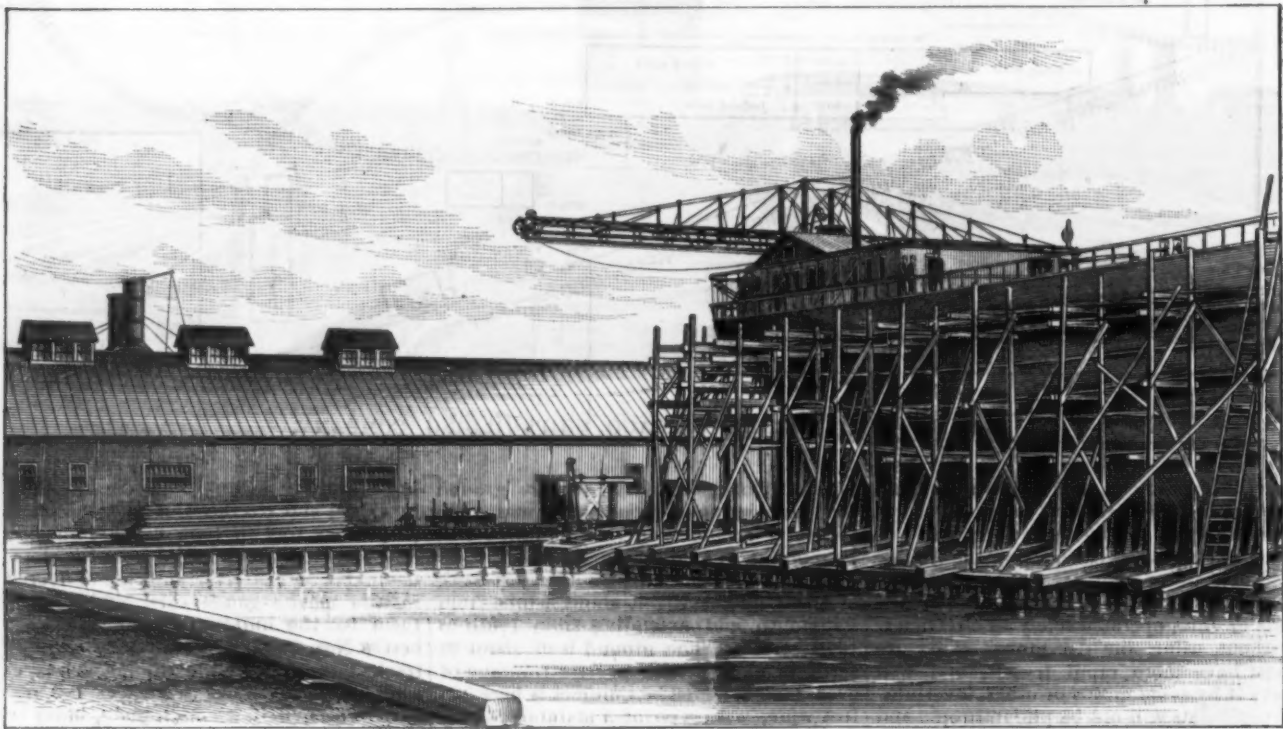
steering gear and deck hoister, equal to any boats now on the lakes.

The Chicago Shipbuilding Company have made excellent progress in getting into active operation. They were chartered but a little over a year since—in November, 1889—and in that time have built their plant and practically built two ships also. The managers, however, are

Dock Company of Buffalo, and builder of some of the most famous steel vessels on the lakes, is manager; Joseph H. Craig, formerly auditor of the Louisville, New Albany and Chicago Railroad Company, is secretary. The directors are: M. A. Hanna, H. M. Hanna, J. F. Pankhurst and Luther Allen, all of Cleveland, and W. L. Brown, Robert Forsyth and W. I. Babcock of



METHOD OF HANDLING SHIP PLATES.



VIEW OF ARRANGEMENT FOR SIDE LAUNCHING.

24½ feet deep, built of steel complete, with double bottoms for water ballast all fore and aft. The machinery was furnished by the Globe Iron Works Company, of Cleveland, Ohio, consisting of a triple expansion engine, 24, 38 and 61 inches diameter of cylinders by 24 inches stroke, and two steel Scotch boilers 14 feet diameter by 12½ feet long, carrying 160 pounds of steam. The vessels will be completely fitted out, with steam windlass and capstan forward, steam capstan, aft, steam

experienced shipbuilders. The majority of the stock is owned in Cleveland, Ohio, by members of the Globe Iron Works Company, whose shipyard has been remarkably successful, and is one of the institutions of which Cleveland is justly proud. John F. Pankhurst, vice-president and general manager of the Globe Company, is president of the Chicago company; Luther Allen of Cleveland is vice-president and treasurer; W. I. Babcock, formerly superintendent of the Union Dry

Chicago. With such a strong directory and able managers the success of the Chicago Shipbuilding Company was practically assured from the start.

The tube mills of the Reading Iron Works are now making large consignments of pipe for the Russian and Turkish oil fields. They have just sent away 150 tons of tubing, consigned to Roumania, and in a few days will ship 10-inch pipe, to be

used in the construction of a pipe line at Batoum, on the Caspian Sea. The company are also filling large contracts for pipes for ice-making machinery, to be erected in the City of Mexico.

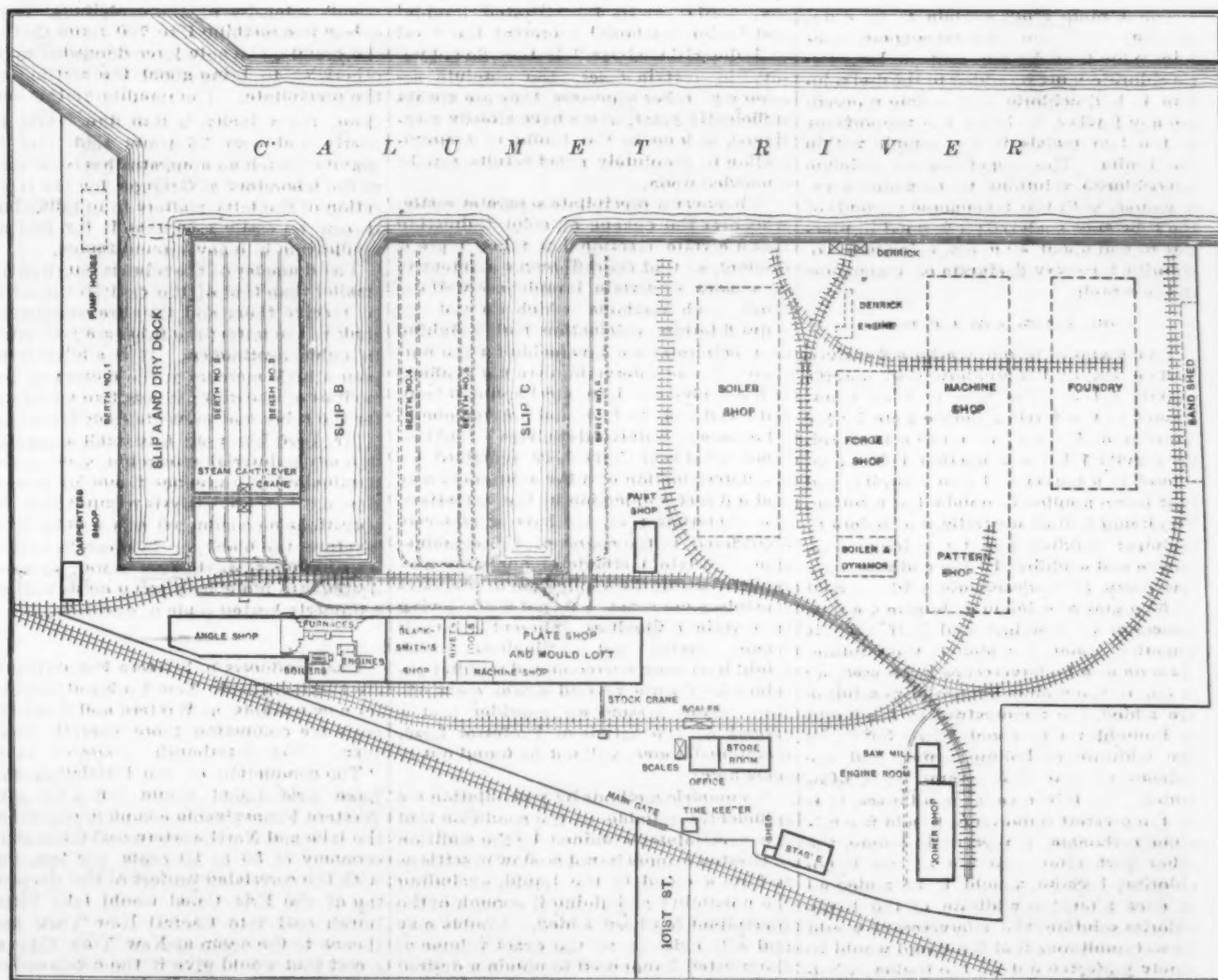
The Bethlehem Armor and Gun Plant.

Only those who have visited the ordnance and armor plant of the Bethlehem Iron Company, South Bethlehem, Pa., can conceive of the enormous amount of work done and of the character of the establishment. It was our privilege recently to pay a visit to the works to in-

tons. The completion of the foundation alone was a tremendous undertaking, the anvil weighing not less than 1550 tons. The great armor plate bending press, which is placed near the hammer, has already been put in place. The tempering plant, with its enormous oil tank and its heating furnaces and crane, is completed, and the tools are being erected in the armor plate finishing shop.

The Bethlehem Iron Company have already delivered a good deal of work to the Government and to private parties. It is a matter which it is well to emphasize that, while the plant is intended primarily for the manufacture of ordnance forgings and armor, it will be largely used for commercial work. Heavy forg-

its melting point, and should be poured quickly. The shrinkage of the above metal is $\frac{1}{16}$ inch to the foot (2.20 per cent. of the length of the mold). The above statement is not only true as to aluminum, but to all metal castings, as is shown by the increased use of plumbago. The use of a plumbago facing guarantees to the casting a smooth surface and bright color. Caution is suggested when purchasing to obtain exactly the kind wanted for different work. One kind of plumbago is better applied by the shake bag, and if the brush is used, another kind will prove better. One preparation of plumbago will sleek, another will not. Another kind is more useful for light castings, another kind for heavier work. Good plumbago will stand



THE CHICAGO SHIPBUILDING COMPANY—PLAN OF WORKS.

spect their installation and witness their operations. The machine shop, certainly the largest building of its kind under one roof in this country, and possibly in the world, is nearly filled with its equipment of ponderous tools, and is doing a large amount of heavy work. The hydraulic forging shop, in which are two Whitworth presses, is in operation, and some of the line of four open-hearth furnaces are producing steel. We may note in this connection that some of the foreign visitors last fall, leading men in that industry, pronounced the open-hearth plant the finest they had ever seen. The famous 125-ton steam hammer is in position and is expected to make its first mighty blow at an early date. The large cranes which are to serve it are being built, two of the heating furnaces are completed and the other two are under construction. The hammer has a stroke of 16½ feet, the weight of tup, piston rod and piston aggregating 125

tons, for which we were dependent upon Krupp and other foreign makers, are now produced at Bethlehem of unequalled quality. This is particularly true of the heavy hollow shafting for marine and stationary engines. The Bethlehem Iron Company have already delivered shafting for eight of the new ships of war, and have contracts under way for the shafting for seven other ships, and for some of the large engines under construction for the Calumet and Hecla Mining Company of Michigan. Eighty-five complete sets of gun forgings have also been delivered, their calibers ranging from 1 pounders to 12-inch. We may note also that we have seen some very handsome heavy steel castings in the shops of the new plant.

Sound castings of aluminum can be obtained in dry sand molds, preferably lined with plumbago. The metal should be heated to a temperature very little above

the heat, and will neither burn nor run before the molten metal. A wash of plumbago for cores, loam work and dry sand castings is indispensable. The Dixon Crucible Company of Jersey City, N. Y., have patiently studied this subject and have embodied their ideas in a little book.

At the eleventh annual banquet of the Civil Engineers' Club of Cleveland, held on March 17, one of the features was a unique menu. It was a steel rule handsomely made by the Lufkin Rule Company of Cleveland, Ohio.

The Boston and Albany will use a 95-pound steel rail. The heaviest rail now in ordinary use in this country is a 90-pound rail on the Reading and Manhattan Elevated. The Chignecto Ship Railway uses a 100-pound rail, and 100-pound rails have been laid in the St. Clair tunnel.

Industrial Analyses.—IV.

On Some Methods of Analyses of Iron, Steel and Cast Iron, as Practiced in Large Industrial Works.

BY AUGUSTE J. ROSSI, C.E., NEW YORK.

SPIEGELEISEN.

It contains generally from 10 to 25 per cent. of manganese and enough iron to insure the success of the method. One gram is dissolved in 15 c. cm. of hydrochloric acid, specific gravity 1.183, the solution being promoted by heat, and the analysis finished as before.

FERROMANGANESE.

The sample must contain 2 to 4 dg. of Mn. If the ferromanganese contains more than 50 per cent of Mn., ferric chloride must be added to the first solution in hydrochloric acid before proceeding any further, to bring the proportions of the two metals in the sample within the limits. The quantities of calcium hypochlorite solutions to be added vary, of course, with the manganese contents of the substance analyzed; it is good in practice to add about 40 c. cm. calcium hypochlorite for every decigram of manganese in the sample.

IRON, STEEL AND PIG IRON.

Five grams of iron or steel are dissolved in 35 c. cm. of hydrochloric acid, specific gravity 1.183. The iron is then transformed to the ferric chloride state by the addition of 7 c. cm. of nitric acid, specific gravity 1.4, the operation being conducted in a beaker of 1 liter capacity, and heat being applied to obtain the solution. The liquor is then neutralized as before to incipient reddish hue by calcium carbonate and acidified by the addition of a few drops of hydrochloric acid. About 13.50 grams of calcium carbonate are then measured or weighed and half of this quantity, about, is added to the solution. As soon as all effervescence has ceased, 40 c. cm. of the calcium hypochlorite solution are added, the temperature of the liquid is brought up to about 75 or 80° C. by the addition of boiling water, and the balance of the 13½ grams of Ca_2CO_3 added. In this case, as in all cases, it is of the greatest importance to add the calcium carbonate, a part of it before, the other part after, the use of the hypochlorite; because, should it be added all at once after, the addition of the hypochlorite solution, the effervescence would be so tumultuous that the liquid would be surely projected out of the beaker, whatever care might be taken, and that also the chlorine gas of the calcium hypochlorite would be mechanically carried away by carbonic acid. The precipitate is thrown on a filter and washed as before. It is very voluminous in this case, but settles down rapidly. It is dissolved in 20 c. cm. only of the ferrous sulphate solution. This quantity is sufficient, but it is necessary for iron, steel and cast iron to add a little sulphuric acid to dissolve the great excess of iron, as well as the calcium carbonate which the precipitate retains. The titration of the ferrous sulphate solution is made consequently in 20 c. cm. each time and before using it in the conditions explained previously.

MANGANIFEROUS SLAGS.

The sample taken must not contain more than 1 to 2½ dg. of manganese to avoid too voluminous solutions. Ferric chloride has to be added if necessary, and it is found to be so most generally.

Conclusion.

We have described the preceding methods as they have been practiced in

certain establishments without entering ourselves into a critical discussion of their respective values. Other processes have certainly been preferred and used elsewhere; but in all industrial works, if chemical analysis has become of the utmost importance, if expenses have been incurred to fit up proper laboratories, it has been at the condition that the analyses could be rapidly and conveniently made. After a very few days, sometimes a day or two, the analyses would lose all their interest, the raw materials would be already in course of transformation into finished products, these products themselves might be even sold or contracts for the same signed. For these reasons, as R. Lezé, professor at the *École d'Agriculture de Grignon*, remarks in a very interesting article (published in the *Génie Civil*, January, 1891) "tests by 'titrated liquids' and 'color methods' represent the ideal of industrial analyses." If they do not imply, in certain cases, the absolute accuracy of other processes, they are always sufficiently exact, as we have already mentioned, as long as the limits of approximation to absolutely exact results can be depended upon.

Whenever a precipitate separates easily, whenever the change of color indicating that a certain reaction has taken place is distinct, so that the differences in intensity of shades of certain liquids are well defined, such methods which do not require filtering, calcination and weighing of precipitates are invaluable for the purpose. These observations are not confined to the analysis of iron, steel and cast iron, but stand true, in fact, and are common to all classes of industrial analyses. Furthermore, what may have been practiced for the determination of other substances may find a direct application in the analysis of the materials that we have exclusively considered in the course of this examination. Certain methods of operating may render possible the application of processes possibly more exact, but not used, owing to certain difficulties inherent to their being carried out, difficulties which might have been overcome and rapidly obtained by the use of said *modus operandi*. For these reasons we consider that a résumé of the article of Professor Lezé, mentioned above, will not be found out of place here:

Volumetric methods by precipitation are sufficiently reliable at the condition that the precipitates obtained by the addition of titrated liquors be not so slow to settle as to form a cloud in the liquid, excluding the possibility of judging if enough of the precipitant has been added. Doubts may and will exist as to the exact volume of the titrated liquor used to obtain a desired effect. H. Lezé has applied the following method: In a substance to be analyzed for industrial purposes, the amount of certain constituents looked for is most generally known approximately. The solution of the specimen to be tested is filtered in several small tubes, the same quantity in each. Known quantities of the precipitant (the titrated liquor) are then added in each tube, the quantities used increasing from one tube to another, and these increases proceeding by drops, or ⅓ c. cm., if wished. All the tubes, properly corked with india rubber corks, are then placed in a centrifugal apparatus and rotated at a great speed for a short time. The tubes are then removed in their order, when the precipitate will be found to be completely settled at the bottom, the supernatant fluid being as clear as if it had been filtered. A small drop of the precipitant is then added by means of a glass rod in each tube. Some of the tubes may then show a small cloud, an indication that an insufficient quantity of the precipitant has been added; others will not precipitate any more. The quantity of the precipitating liquor can then be readily

ascertained with an approximation as near as can be desired, since it is comprised between that which caused a fresh precipitation in one tube and none in the following one of the series. The apparatus used is as simple as possible. It consists only in a horizontal steel disk or drum in which are drilled, according to the radii, cylindrical holes of which the axis is slightly inclined to the horizon.

The tubes placed in the cavities are firmly held, owing to this slight inclination of the axis. The disk is moved by hand by means of a crank around a vertical axis by a system of gearing and endless screw, so combined that a speed of 40 to 50 revolutions or turns of the crank corresponds to a velocity of 2400 revolutions per minute for the disk. The radius of the disk being about 15 cm. (6 inches about), intensity of the centrifugal force $4\pi^2nr$ is something like 700 times that of the gravity, the only force depended upon otherwise to bring about the settling of the precipitate. The rapidity of the settling, the velocity, is thus like ⅓700, or nearly and over 26 times that due to gravity. Such an apparatus has been used at the laboratory at Grignon for the separation of the fatty matters from milk, but it can be easily seen that it can find its application in many circumstances.

The diameter of the tubes is but slightly smaller than that of the cavities intended to receive them and they are completely sunk in the latter; the tubes are graduated in cubic centimeters. It is advisable to pour a little mercury at the bottom of the cavities of the disk; it acts like a cushion for the tubes and prevents their breaking.

Mr. Lezé has used this small apparatus in many industrial researches, such as determination of glutenous flours, of margarine, &c. If the analysis requires that the operations be conducted at a certain temperature, the block, or disk, can be heated by dipping it in boiling water, or even heated still more by placing on its surface a properly heated plate of cast iron.

Coal producers in Western Pennsylvania are looking East to New York and vicinity for new markets, as Western and Southern coals are competing more sharply every year. The *Pittsburgh Dispatch* says: "The completion of the Pittsburgh and Lake Erie Canal would not only give Western Pennsylvania complete control of the lake and Northwestern coal trade at an economy of 50 to 60 cents per ton, but with the correlated project of the deepening of the Erie Canal would take Pittsburgh coal into Central New York and thence to the ocean at New York City at a cost that would give it the command of a limitless market. It is pertinent that while the deepening of the Erie Canal might be necessary to secure the fullest economy, 6-foot barges loaded with coal could pass from the Monongahela River mines to New York City as soon as the Pittsburgh and Lake Erie Canal was opened. The figures which show the advantages of the proposed route simply on the coal traffic alone are very striking. We are now shipping coal to New Orleans, 2000 miles, with several productive fields intervening between us and that limited market. The new route would give us the unlimited market of New York by a water route of 750 miles in length. The fact that Pittsburgh coal could be sold in New York \$1 per ton cheaper than present prices represents a saving in fuel bills of New York and New England that would pay for the canal improvements in five years."

The Court of Appeals has decided that a creditor of a deceased member of a benefit society has no right to seize the endowment payable to his widow or children.

Canadian Railroad Competition.

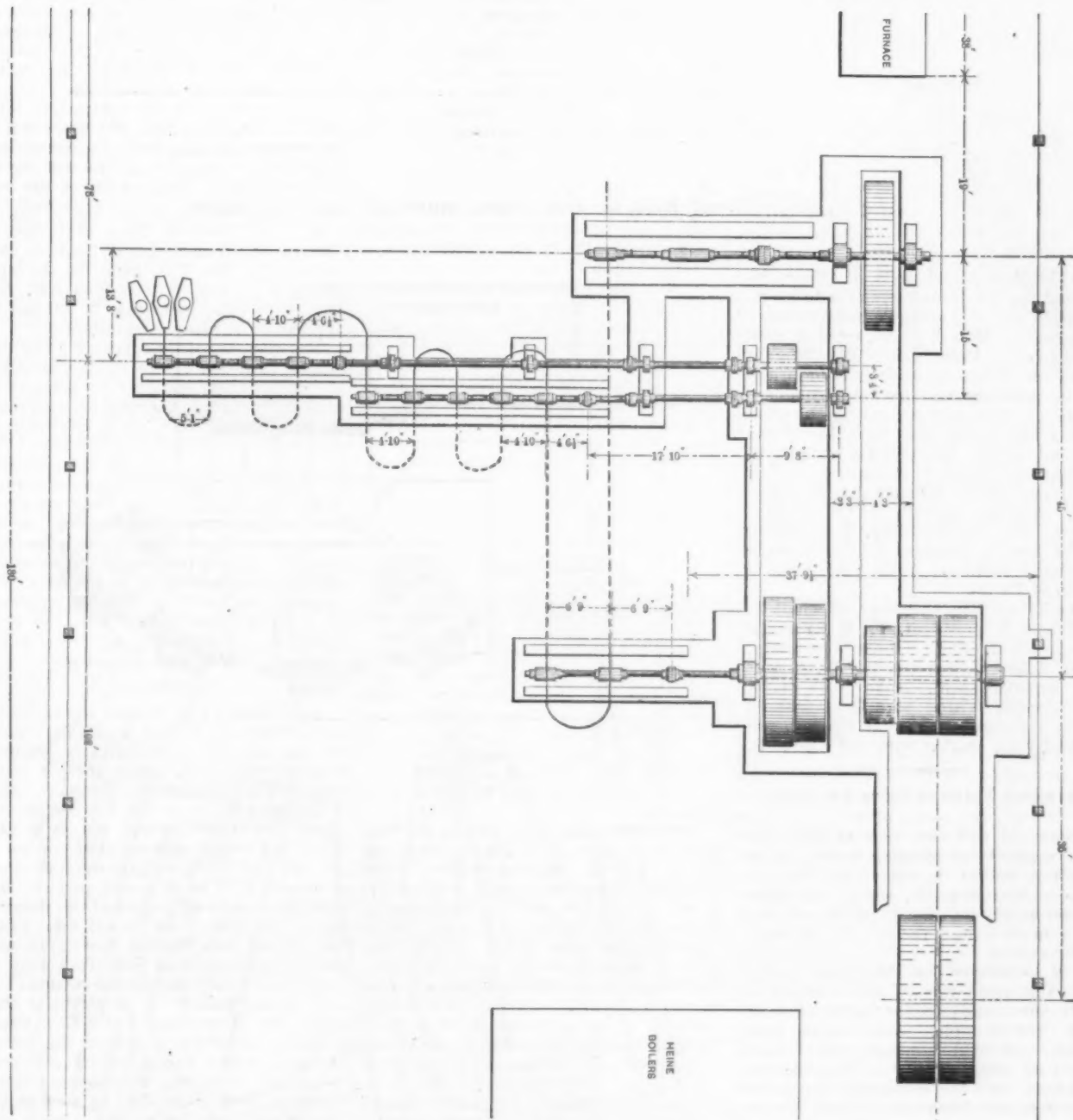
The counsel for the Vanderbilt roads on the Canadian transportation question made an elaborate argument before the Interstate Commerce Committee of the Senate in favor of modifying the long and short haul clause in certain cases, to enable American roads to compete on an equality with their Canadian rivals, who suffer no such restriction. He endeavored to show that Canadians now have a controlling advantage, enabling them to take an undue

further efforts to equalize the competition, withdrawing from all agreements with the Canadian roads in relation to traffic or rates, and then putting in dual tariffs, each set absolutely independent of the other," a form of discrimination which the railroad advisers believe to be valid. If it should then appear that American products are at a disadvantage, the Interstate Commerce Commission are to be asked to suspend the long and short haul clause. By the method proposed American and Canadian roads, we are told, can com-

business of 30 foundries have been sold. The patents, plants, good-will and all, of the 30 companies are valued at \$12,000,000, but will be capitalized at \$18,000,000 — \$10,000,000 in preferred stock, \$5,000,000 in common and \$3,000,000 in bonds.

The Kilmer Rod Mill.

The Kilmer Mfg. Company of Newburg, N. Y., who have in the last few years developed rapidly a very large busi-



PLAN OF THE KILMER ROD MILL.

proportion of the traffic, and that to equalize the competition Congress should put purely American traffic on the same basis as our coastwise traffic, foreign ships and foreign roads being alike prohibited from entering into it. Surmising that public sentiment will not yet approve such a resort, on account of the difficulty of comprehending the peculiar situation, it is suggested that to obtain immediate relief only two methods are possible—one, the ignoble method of paying a lump sum to the Canadian roads as a sort of peace offering, as practiced by the transcontinental lines to California; or, secondly, "have all the competing American roads that are not controlled by the Canadian roads abandon

pete for traffic on equal terms, and it is affirmed that the equalization of rates of freight can be arranged in no other way. It is represented that with the cost of maintaining rates against Canadian competition eliminated, "a reasonable rate would be the present rate after deducting that cost from it." But people, in the Eastern States particularly, will not be likely to see the force of this logic so long as Canadians transport freight for less money.

A type foundry combination has only recently been effected, and its officers are yet to be chosen. It is in the form of a corporation, to which the property and

ness in manufacturing a series of different articles of wire, found it expedient to add to their plant a wire-rod mill, which was visited by a representative of *The Iron Age* on the occasion of its formal opening recently. The mill itself is a departure in some respects from the ordinary type, the design shown in the drawing being the invention of I. A. Kilmer. It will be observed that a billet is rolled in the usual way in a billet train of seven passes, whence it is delivered through a trough with twist guide to the side train shown in the drawings. Through a repeater the rod is conveyed to the second pass on the side train, from which it issues as an oval, and is delivered through a trough with twist

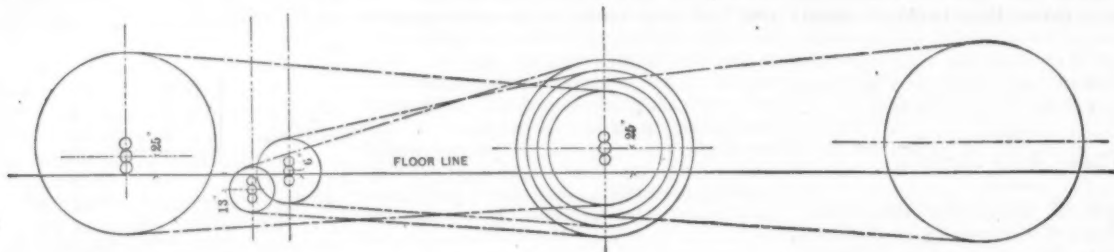
guide to the third train, having five stands of rolls. It finally reaches the finishing train, with four sets of rolls, the repeaters being on the same side of the train, in which, of course, the rods are square. It is finally delivered from the last pass to the Tallman reels, details of which are also shown in the accompanying engravings.

The mill is equipped with five Heine boilers of 200 horse-power each, built by

while flaxseed is a notable exception to the above instances, and is nearly 30 cents a bushel lower than last year.

The showing for the producer is not so brilliant in the matter of live stock, yet, with, perhaps, one exception, he has relatively little just cause for complaint. Hogs, it is true, have dragged along at a low-price level for many weary months, and are now 35 to 50 cents per 100 pounds

of profit and loss which do not cut any direct figure in the speculative world, it will be noted that practically everything in the way of prices is in his favor at the moment. The last annual review of the *Tribune* showed that a total of 140,548,000 pounds of butter were received in this city alone during the year 1890, indicating the magnitude of a branch of the farm industry which does not attract much



SIDE ELEVATION OF KILMER ROD MILL, SHOWING DRIVING GEAR.

Van Zile, MacCormick & Co. of Albany, N. Y., and one tubular boiler, and is driven by a Wright engine, having 30-inch diameter cylinders and 48-inch stroke, rated at 2400 horse power. From thence the different trains are driven by belting, as indicated in the drawings and in the sketch appended, which also shows the location with reference to the floor line of the different trains. The mill has not yet, of course, been tested to its capacity, but it is estimated by the Kilmers that its capacity is equal to any mill in this country, starting with a 4-inch billet. The location of the heating furnaces for the billets in question is indicated on the plans, with a hearth of 7 x 20.

The Kilmer Mfg. Company, of which T. S. Kilmer is president, T. A. Kilmer is vice-president, E. E. Kilmer is secretary, M. D. Kilmer is treasurer and W. A. Kilmer superintendent, make wire nails, wire staples, twisted wire fence without barbs, bale ties, ornamental fencing, galvanized wire, market wire and wire rods.

Advanced Value of Farm Products.

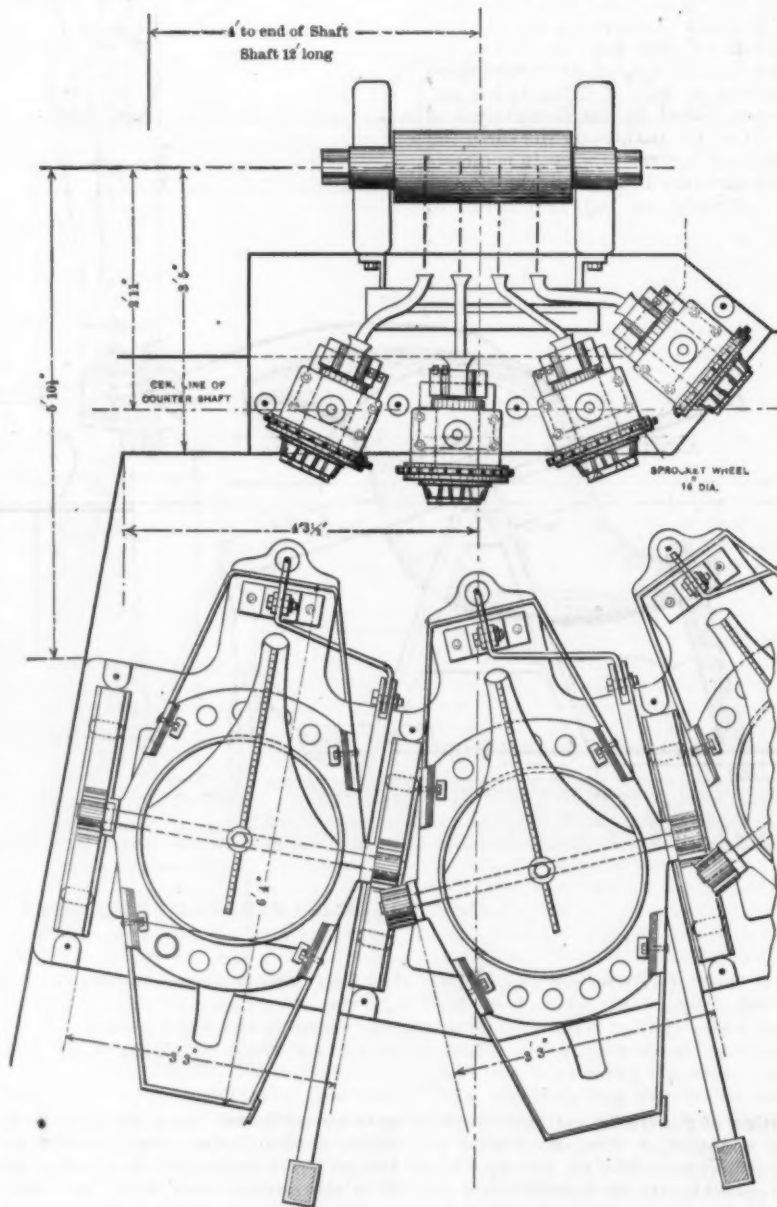
Compared with last year at this date farm products are bringing a high range of values, and at the same time the cost price of cotton goods, sugar and other articles which we cannot produce is generally much in our favor. The *Chicago Tribune* says:

If a soothsayer last March had promised the agriculturist that within a twelvemonth the price for certain kinds of grain, for example, would more than double, the wild prophecy would have been cast aside without a thought; yet such have been the wonderful changes in more instances than one. Take, for example, oats. Last year at this time the standard grade was quoted in the cash market in carload lots and upward at 20½ cents per bushel, and dull at that, and within a day or two a price as high as 51½ cents has been paid, or exactly 150 per cent. advance. Other important cereals show like prominent gains, although not in quite the same proportion. Spring wheat improved from 79 cents a year ago to \$1.01 per bushel, an advance of nearly 28 per cent., while corn has more than doubled in price and has touched a higher point than at any time in the last seven years, recently selling at 61½ cents per bushel, against 28½ cents a year ago, an improvement of 116 per cent. Rye (in the berry) has climbed from 42½ cents to 95 cents, a gain of plump 52½ cents in a year, or 123 per cent. Against 30 to 50 cents for barley then, farmers are now receiving 65 to 75 cents for the same grades,

lower than a year ago. Desirable beef cattle, however, are selling at \$5.25 to \$5.80 per 100 pounds, against \$4.75 to \$5.20 then, or an enhancement in value of 50 to 65 cents, with sheep for mutton a good second at an improvement of about 25 cents.

Turning, finally, a rapid glance at important factors in the farmer's ledger page

attention in the commercial world at large. The product was quoted a year ago at 24½ to 25½ cents per pound for the best grades of creamery, and now the selling price is the abnormally high figure of 34 to 35 cents, or nearly 10 cents advance, with cheese showing a comparative improvement of 1½ cents, and sellers indifferent at that. Good to choice prairie hay is now



PLAN OF THE TALLMAN WIRE-ROD REEL.

readily saleable at \$7 to \$11 per ton, against a corresponding figure of \$6 to \$8.50. Green-salted hides are 50 per cent. higher, at 4½ cents and 6½ cents per pound respectively. Now look at the staff of life, the humble potato, which a year ago went begging for recognition at 42 to 45 cents per bushel in a wholesale way, and now buyers are falling over one another in their anxiety to secure needed supplies at figures as high as \$1 to \$1.10 per bushel, a sheer upturn of 60 to 70 cents per bushel, or a price much more than doubled. And so the list might be extended in an indefinite way to show that for once in their lives the farmer and producer who have anything to sell are really "on top."

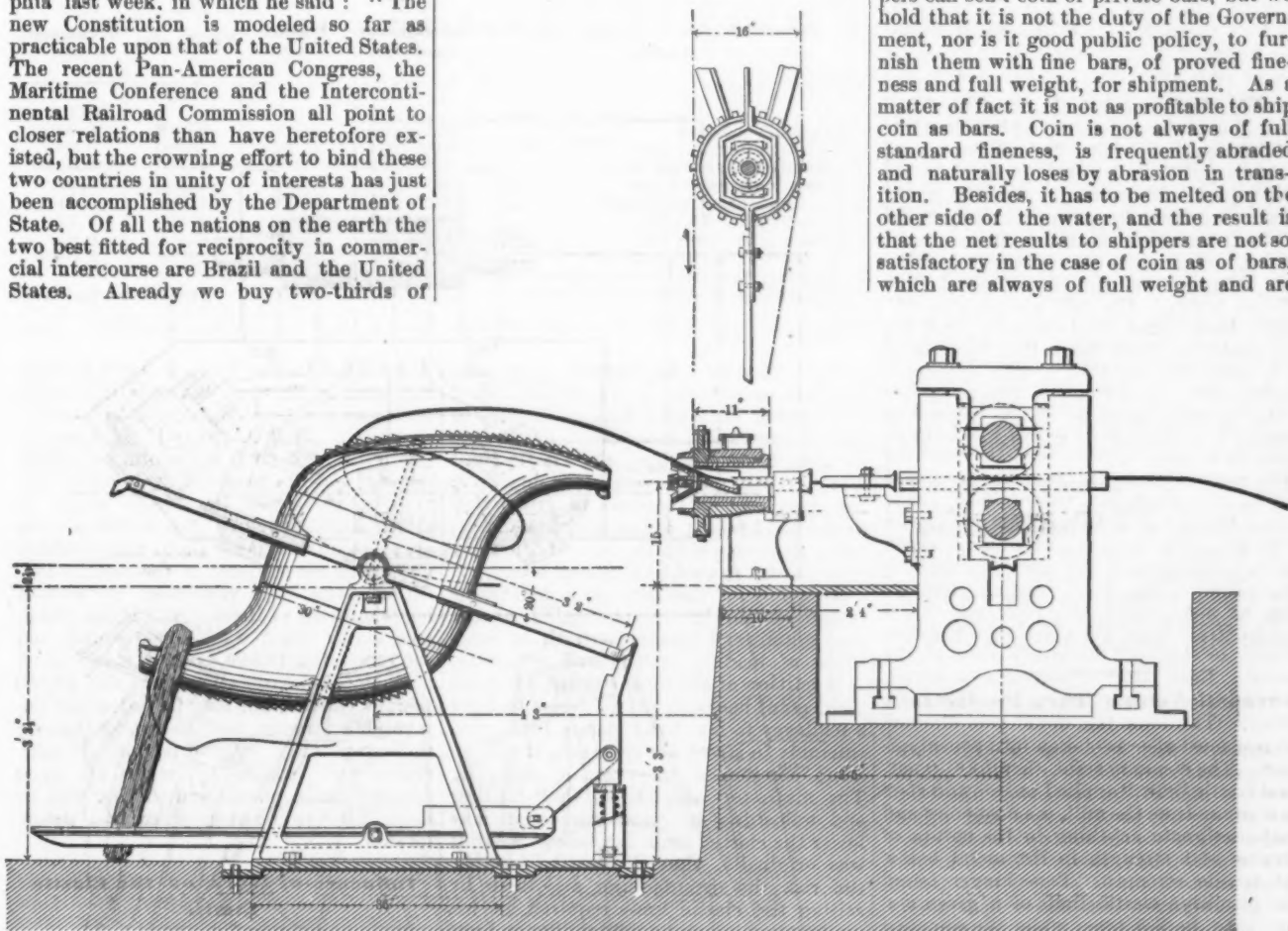
Trade With Brazil.

The benefit of reciprocity with Brazil was the subject of a lecture by ex-Minister Robert Adams, Jr., delivered in Philadelphia last week, in which he said: "The new Constitution is modeled so far as practicable upon that of the United States. The recent Pan-American Congress, the Maritime Conference and the Intercontinental Railroad Commission all point to closer relations than have heretofore existed, but the crowning effort to bind these two countries in unity of interests has just been accomplished by the Department of State. Of all the nations on the earth the two best fitted for reciprocity in commercial intercourse are Brazil and the United States. Already we buy two-thirds of

dressed the Arkwright Club of Boston. Already had the Minister of Finance of Brazil issued his instructions to the collectors of customs in the different parts of the republic, and the last mails from Brazil brought newspapers containing these instructions officially published. The opposition of England and France and Germany to this treaty was not unexpected, and the British Government had instructed its minister at Rio de Janeiro to protest against the granting by Brazil of any favors to the merchants of the United States that were not given also to the merchants of Great Britain. The English manufacturers made goods especially for that market, and had succeeded in building up an enormous trade. If the manufacturers of the United States would produce similar goods and study the requirements of the market there would be no difficulty in building up an equally

were forced to sacrifice speed and coal supply; nevertheless he felt bound to acknowledge that the fastest English cruiser was slower than the fastest American. Mr. Biles concluded that the work of the American contractors was worthy of study by all Englishmen interested in the subject.

Gold Shipments.—The new law regulating gold exports leaves it optional with the Treasury Department whether to pay bars or coin in making shipment at seaboard ports. The Director of the Mint while in the city last week explained "that it is undesirable and against public policy for the Government to furnish gold in its most convenient form at a seaboard port to shippers of gold, and we proposed to exercise the same discrimination that has been exercised by European countries in regard to the export of gold—that is, we do not propose to facilitate it. Shippers can send coin or private bars, but we hold that it is not the duty of the Government, nor is it good public policy, to furnish them with fine bars, of proved fineness and full weight, for shipment. As a matter of fact it is not as profitable to ship coin as bars. Coin is not always of full standard fineness, is frequently abraded and naturally loses by abrasion in transition. Besides, it has to be melted on the other side of the water, and the result is that the net results to shippers are not so satisfactory in the case of coin as of bars, which are always of full weight and are



THE TALLMAN WIRE-ROD REEL.—ELEVATION.

our coffee, half of our rubber and cocon, and we stand ready to take all of her sugar and hides free of duty. In return she opens her ports free to our wheat, corn, rye, potatoes, salted pork and fish, coal, agricultural tools and machines, and a reduction of 25 per cent. is granted on lard, hams, butter, cheese, manufactures of cotton, cloth and clothing, also of iron and steel, planks, and all manufactures of wood, including furniture, carts and carriages. With such a reduction in favor of our manufactures, and with the recent postal subsidy to assist in transportation, a great vista opens of future prosperity, and with two such republics committed to arbitration, we may expect to see the Estados Unidos do Brazil lead the van in South America as has the United States of America done in the North."

Speaking on the same subject, W. E. Curtis, director of the Bureau of the American Republics at Washington, ad-

large and profitable trade, particularly with the advantages of 25 per cent. afforded them by the Brazilian treaty.

The new navy being turned out from American shipyards is gathering fresh laurels, showing that "peace hath her victories." At the annual meeting of the Council of Naval Architects, held in London, Mr. Biles, a leading member and high authority, read a paper on the navy of the United States. He declared that in general workmanship and many details the new ships were equal to England's best. American designers and builders were most capable and careful. Their work was quite up to that of the first of European naval builders. The armament of the latest built American battle ships was, he said, more powerful than that of any ships of the same class built in Europe. In order to effect this, however, Americans

received readily by foreign banks at their stamped weight and fineness." The change now made is not on account of any deficiency of gold, as there are about \$300,000,000 available for Treasury payments.

The treasurer's report of the New York Metal Exchange showed the invested property: Exchange Building, \$46,106.25; furniture and fixtures, \$2000; \$5000 4 per cent. West Shore bonds, market value \$5100, cost \$5093.75; cash in Union Trust Company, \$2500—total, \$55,700. Average to each certificate holder, 249 memberships outstanding, \$223.70.

A strong movement has been started in Philadelphia by prominent business men and shippers to secure a line of mail steamers between Philadelphia and Monrovia, the capital of Liberia, touching at the Bermudas, Canaries and Madeira.

Defining the Elastic Limit.—II.

BY P. KREUZPOINTNER, ALTOONA, PA.

Raising of the Elastic Limit.

As has already been remarked, the elastic limit may become a very uncertain quantity if the metal is subjected to stresses greater than the primitive elastic limit, but less than the yield point. The causes by which the elastic limit, and with it the yield point, may be raised to any quantity between the primitive elastic limit and the breaking strength of the metal are numerous and complicated. But worse still, other causes may lower it again, even lower than what the elastic limit was when the metal got into our hands, the so-called "natural" or "original" elastic limit. That is to say, if the elastic limit of the metal was 10 tons per square inch when we received it, and it was raised to 12 tons through tensile stresses straining the metal, it is conceivable that opposing forces like compression may lower the original elastic limit of 10 tons to 8 tons or even to the primitive elastic limit, which, let us assume, was 7 tons.

J. E. Howard, engineer of tests at the United States Watertown Arsenal, in his letter to the Boston Herald on the Bussey Bridge disaster, very truly says: * "In case a load of tension is applied, exceeding the primitive elastic limit, a new elastic limit is formed equal to or sometimes exceeding that load. In this manner a new elastic limit may be formed anywhere up to nearly the tensile strength. It will be seen from this how little importance can be attached to the elastic limit unless it is known how it was formed, and when an engineer says the working stresses should never exceed the elastic limit, and does not define that limit, taken strictly, that only means the tensile strength shall not be exceeded, which must be obvious to any one." Cold rolling, hammering, wire drawing, tempering or any treatment which causes internal strain raises the elastic limit, either locally or through the whole mass of the metal. Rest, after straining a structure beyond the elastic limit, has the same effect. The time the metal was allowed to rest must also be taken into consideration. The common term, therefore, "natural elastic limit," applied to iron and steel as it comes from the mill, is a misnomer and may designate anything in the nature of strains and strength in the metal below its tensile strength. Bauschinger found the primitive elastic limit of a given material to be 9.5 tons, while the so-called "natural" elastic limit of the same material—that is, as it came from the mill—was 12 tons.

Thurston, Beardslee and Bauschinger discovered, independently, that time is an important factor in raising the elastic limit by raising the load applied. These investigators were the first to find that the elastic limit thus raised may continue to rise for hours and days after the load has been removed and the metal be allowed to rest †

Bauschinger also found the effects of variable loads, for instance one causing extension and the next stress following causing compression or bending, to be less marked in raising the elastic limit than when only one kind of stress is acting on the metal. All the results of the most carefully conducted investigations carried on not for weeks and months only, but for a number of years, emphasized the

necessity of making a sharp distinction between the primitive elastic limit, within which no change takes place, up or down, on the removal of the load, and the "natural" or "original" elastic limit—that is, that elastic limit which may be anything up to the tensile strength of the metal, made so by manipulation in the testing machine, by hammering, cold rolling, punching, cold straightening, wire-drawing, flanging, internal strain, or any stress greater than the primitive elastic limit. Temporary removals of the load, from a few minutes up to days, weeks or months, from a structure which is being subjected to stress, if strained beyond the primitive elastic limit, but within the yield point, will raise the elastic limit every time such strains are repeated.

In the following table, the foregoing is more clearly illustrated:

Effects of Alternating Stresses.

While the elastic limit can be raised by one kind of stresses, an opposing kind of stresses may lower it again, even lower than it was at first. Thus if the primitive elastic limit was 10 tons and had been raised to 13 tons by successive loading and resting, if a compressive force is applied directly after relieving the metal from its tensile stress, the elastic limit may be lowered to 12 or 11 tons, and under unfavorable conditions even to zero or 10 tons.

The elastic limit thus lowered may be raised again slowly by one kind of stresses, but is lowered again by opposing stresses. This explains to us why structures which are subjected to frequent alternating stresses, like axles, crank pins, tires, piston rods, &c., require a high range of primi-

TABLE II.

Condition.	Modulus of elasticity.	Elastic limit.	Yield point.	Permanent set.
				Millimeter.
1. Original condition.....	30,900,000	32,800	39,100	0.00029
2. Directly after first test ..	30,900,000	32,980	43,200	0.00071
3. Directly after second test.....	30,857,000	35,970	44,900	0.00258
4. Directly after third test.....	30,857,000	35,970	45,600	0.00180
5. 15½ hours after fourth test.....	30,857,000	36,970	47,900	0.0040
6. Directly after fifth test.....	30,430,000	32,800	49,300	0.330
7. 3 hours after sixth test	30,800,000	35,970	63,400	0.600
8. 45 minutes after seventh test.....	30,140,000	37,440	73,200	0.00058
9. Changing the load 10 times between primitive elastic limit and 73,000 pounds....	28,580,000	25,160	73,200	0.00088

The lessons to be learned from this table are important. 1, we see the yield point rising far above the elastic limit in regular succession, irrespective of changes in load; 2, we see how the elastic limit may fluctuate under changeable loads; 3, the permanent set increases in proportion to the yield point; 4, the modulus of elasticity decreases with the loss of ductility of the metal caused by repeated sets.

This loss of ductility is a noticeable feature of the successive raising of the elastic limit and tensile strength by repetition of loading, resting and reloading. A repetition of the same stresses after the yield point has been passed seems to have a tendency to lower the elastic limit considerably in steel; not so much, if any, in iron; sometimes, however, it raises it. The ninth test also shows that loading and unloading in rapid succession may lower the elastic limit far below what it was originally, thus illustrating forcibly the risk the manufacturer may incur by raising the elastic limit required in his product too much by cold rolling or hammering, since subsequent stresses in service may be of such a nature as to considerably lower the elastic limit thus artificially raised. The higher it was screwed up in that way the greater the fall.

The United States Testing Board made extensive experiments as to the influence of time on the condition of the metal after being strained and unloaded.*

We present but one example, being the average of 12 tests of bar iron from 1 to 2 inches in diameter. The material was strained up to tensile limit one day, unloaded, rested and broken the next day:

Gain in strength: In pounds, 5606; in per cent., 12.8.

Four time tests of steel showed gains:

In 1 hour.....459 pounds
In 1 day.....704 pounds
In 1 week.....653 pounds
In 1 month.....1834 pounds

In all these experiments it has been found that the modulus of elasticity remains constant only within the primitive elastic limit. As a rule it is lowered with the raising of the elastic limit artificially.

tive elastic limit to leave as large a working force, as it were, between the elastic limit and the breaking strength of such a structure. That is to say if the specified elastic limit of such a structure is 40,000 pounds and its breaking strength 75,000 pounds, there will be a high range of elastic limit, provided the 40,000 pounds are all primitive elastic limit, within which no change takes place in the metal's condition, even by a repetition of various loads millions of times. But if the primitive elastic limit was 30,000 pounds and the remaining 10,000 pounds made up by mechanical manipulation, then the 10,000 pounds elastic limit may be lost under unfavorable stresses, and the metal having thereafter only 30,000 pounds of elasticity with which to resist all extra stresses, pulls, pushes and shocks, will be more liable to be overstained and deteriorated.

Influence of Work on the Elastic Limit.

When we consider that the "natural" elastic limit of the material, as it comes from the mill, may be anything from zero up to near the tensile strength, according to mechanical treatment, it is well to know what influences may have caused changes from a normal condition of the metal to a more or less abnormal one. If we know that a steel tire or plate has been rolled cold and carelessly cooled, its elastic limit will not only be unusually high, but will likely have in addition internal strains, which leave but little useful strength in the metal, and the factor of safety would therefore have to be very great to avoid the chances of sudden fracture to which metal in that condition is liable to.

The nearer the yield point is to the ultimate strength the less ductile is the metal, notwithstanding the satisfactory elongation and contraction which that metal may give under the slow, steady pull in a testing machine, especially if the material is tested soon after finishing, when the influences of the elastic reaction are still strongest and are apt to mask the real condition of the metal.

* The Iron Age, May 19, 1889.

† Bauschinger.—Mittheilungen XIII. Weyrauch.—Festigkeitslehre. Ledebur.—Handbuch der Eisenhüttenkunde. Unwin.—Testing of Materials. Thurston.—Materials of Engineering.

* Report of United States Board of Testing Iron and Steel, 1881.

One sample of the authentic * results of investigation on the influence of work on the elastic limit will be sufficient to show its effects.

TABLE III.—Influence of Reduction in the Rolls on the Elastic Limit.

Size of bar, in inches.	Elastic limit, in tons.	Tensile strength, in tons.
4	10.45	20.6
3½	11.1	21.0
3	11.8	21.3
2½	13.3	21.1
2	14.2	21.6
1½	16.3	21.8
1	17.2	23.1
¾	16.0	22.8
½	17.4	23.5
¼	17.9	24.1

Thus it will be seen that while the elastic limit of the 4-inch bar is one-half the ultimate strength it is nearly three-quarters of the latter in the ¼-inch iron. This shows also how meaningless it is to say iron and steel has such and such an elastic limit, if we do not know or state how that elastic limit was formed.

Relation of the Elastic Limit to Manufacturing Iron and Steel.

Our inquiry would be incomplete if we would not consider the position of the elastic limit as a merchantable commodity in every-day business transactions; so much of a specified quality for a given price. It is not too much to say that in most cases where the elastic limit has been specified the yield point has been bought and sold, hence often disappointment, confusion, friction and vexation. It would require a radical change, however, in the present methods of manufacturing iron and steel to change prevailing conditions in the market. All present industrial conditions conspire to prevent such a change for the time being. However, a great deal will have been gained if a clearer comprehension of the physical properties of iron and steel shall have taken the place of the present vagueness and tendency to jump at wrong conclusions. A few stock phrases are passing too often as a basis for the adjustment of important metallurgical questions. There should be always a distinct understanding whether the primitive elastic limit, the original elastic limit, or the yield point is meant.

The "wear and tear" quality of iron and steel depends essentially on its elastic state. As has been shown, this elastic state may become a rather uncertain quantity, due to various causes. It is the maker's interest, therefore, to ascertain the kind of stresses the metal will be subjected to in service, whether it will undergo mechanical treatment in the shop by heating and hammering after the material has left the mill. In a tire, for instance, it is by no means a matter of indifference whether the elastic limit has been brought up to specifications by cold rolling or by chemical constituents like carbon. The necessary heating and cooling of the tire for the purpose of shrinking it on the wheel center will have an entire different effect on the former than on the latter. When raised by cold rolling the elastic limit will be lowered much more than when its height is due to carbon. The subsequent hammer blows which the tire has to sustain in service, being contrary or opposing stresses to the tensile stresses in the tire, may lower its artificial elastic limit very much. As a consequence, one tire wears much better than the other, though both may have had the same elastic limit and ultimate strength when they

left the mill. Axles present an analogous case. Therefore, while it is true that it is the engineer's duty to see how the metal behaves which he has specified to be made, the manufacturer will get himself into trouble sooner or later if he fails to consider the factors presented in the foregoing columns and to apply the lessons to be drawn from them to his practical work.

It is probably due to the same causes, in part at least, that fire-box steel of say, 60,000 to 68,000 pounds wears better if its required hardness is due to carbon instead of being brought about by cold rolling. The elastic limit in carbon steel is not so easily lowered by the repeated heating of the fire box as the low carbon and cold-rolled plate.

These are questions which the intelligent and wideawake iron and steel maker should not fail to study diligently. The uncertainties as to the elastic limit of materials can be largely lessened, though hardly entirely removed, it would seem, by annealing and careful cooling. Annealing has a tendency to put the metal on its own merits, as it were. It is said that Krupp's success in steel making is largely due to his thorough understanding of the corrective influence of annealing and slow cooling.

Annealing has a greater influence on the elastic limit than on the ultimate strength. The average of a large number of tests made by Kirkaldy shows the following differences:

	Elastic limit.	Ultimate strength.
Unannealed.....	34,455	64,314
Annealed.....	32,320	62,730

The nearer the elastic limit of a given product to the primitive elastic limit, when it leaves the mill, the safer will be the position of the manufacturer, other things being equal, as to the final outcome of that material in subsequent service. The further his product departs from the primitive elasticity or unchangeable state of the metal the more risk he takes, because of the uncertainties of the changes liable to take place in the metal under the influence of forces which would not change the metal within its primitive elastic limit. Twenty tons of mixed forces pitched against 20 tons of primitive elastic limit will result in a draw on account of the homogeneous nature of the latter.

Twenty tons of mixed forces pitched against 15 tons of primitive elastic limit, aided by 5 tons of something of the same kind but of a different nature, may easily win on account of the heterogeneous character of the latter.

Conclusions.

From all that is known on the subject discussed herein, the following conclusions are derived by Bauschinger:

1. Below the limit of proportionality or primitive elastic limit no change takes place in the metal even after the application of a load, not greater than the primitive elastic limit, millions of times.
2. Straining a metal beyond the primitive elastic limit produces a permanent set, and if the load be removed and the metal allowed to rest, the elastic limit will be raised to the load applied.
3. A new elastic limit will be formed with every new loading, unloading and resting, so that the elastic limit will become higher than the original ultimate strength and nearly as high as the last ultimate strength formed. (Thurston mentions a case of overstrained iron: Elastic limit, 39,000 pounds; ultimate strength, 44,000 pounds per square inch).
4. The elastic limit can be raised by a load exceeding the elastic limit but below the yield point. It reaches its maximum at the yield point, but if the load is increased beyond the yield point, the elastic

limit, thus raised, is lowered again to or near the primitive elastic limit.

5. Shocks, vibrations and alternating stresses lower the elastic limit thus raised. The yield point is also lowered, but not so much. The elastic limit thus lowered can be raised again slowly, but not higher than the original elastic limit.

6. Heating and cooling steel quickly under 630° F. or cooling slowly under 810° F. does not change the elastic limit or the yield point. With wrought iron the effects begin at 720° F.

The writer would add to this:

1. Provision should be made in specifications for the annealing and careful cooling of such material as is subjected in service to alternating stresses, as, for instance, a change from tension to compression or torsion.
2. Manufacturers to agree with the contracting party as to the term "elastic limit," whether it be the primitive or the "natural," also called the "original," elastic limit, or the yield point.
3. If the elastic limit and not the yield point is to be the measure of equality, both parties should insist on the best and most approved methods and instruments for taking the elastic limit, and then only shall it be taken by one known to be an expert on the physical properties of metals and well versed in experimental physical metallurgy, to avoid misleading results.

Labor Troubles at Richmond.

On the 19th inst. about 250 of the men employed in the puddling mills of the Old Dominion Iron and Nail Works Company, at Richmond, Va., went out on a strike on account of a reduction in their wages from \$4 to \$3.75 per ton. For some years past the puddlers at Richmond have by their own agreement been paid the wages given by the Harrisburg, Pa., mills, but on March 2 the price in Harrisburg was reduced to the above figure, and notice was given by the Old Dominion Company that the example would be followed. Since that time the puddling mills of this company have been idle, but the other departments of the plant have been and still are in operation, and the business of the company is said to be in no way impaired.

Nearly 150 machinists employed at the Richmond Locomotive and Machine Works have gone on strike. The apprentices, 25 in number, also quit work. The trouble does not involve the question of wages, the sole point in contention being whether unskilled men shall be placed in certain positions in the machine shops in which skilled operatives are usually employed. A man was changed from one machine to another, and the machinists claimed that he was not a full-fledged journeyman, and they objected to his working there. The management refused to allow the machinists to dictate to them in such matters, claiming the right to say who should work on their machines and who should not. In the marine section of the shop where the strike took place the battle ship Texas is being built.

The Vulcan Iron Works, one of the largest establishments of its kind in Richmond, Va., is also having trouble with its labor. This plant employs about 150 workmen and was compelled to suspend operations entirely a few days ago on account of their force going out on a strike. This was caused by the inability of the company officials to make a satisfactory arrangement with the men regarding the frequency of pay days. It seems that from the time these works started until last December the men were paid monthly. At that time the workmen made a demand for fortnightly payments and this was acceded to. On the 18th inst. the company notified the employees that in view of the fact that they were simply running

*Report of United States Testing Board, 1881, p. 38.

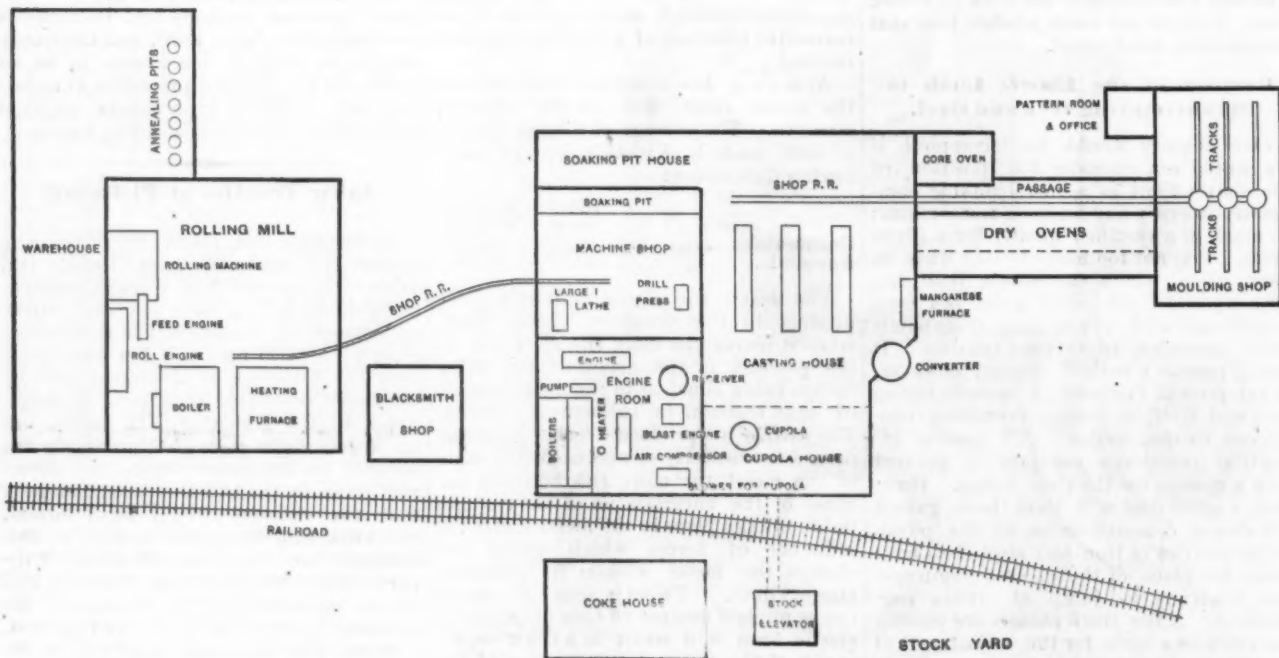
to keep the men at work they would return to their old plan of monthly payments during the dull time. They told them, however, that if at any time the men needed money they could have it advanced. The company also informed the men that unless the arrangement was satisfactory to the men a shut-down would be ordered. Work has since been resumed.

The Fowler Steel Car Wheel Company.

The Fowler Steel Car Wheel Company of Chicago have for some time had the Robert system in operation at their steel works with satisfactory results, and now feel justified in the statement that the steel made by this process is adapted to the production of steel castings for their car wheel blanks. When the company first began the manufacture of solid steel car-wheels it was for the purpose of utilizing the rolling machine invented by their president, Hervey W. Fowler. This

there is a continuous movement forward from the receipt of the raw material. Molds for the car-wheel blanks are prepared in a room in the rear of the casting house. They are dried in ovens between this room and the casting house, as shown in the diagram, and are brought into the latter by an overhead railroad. The cupola which serves the converter occupies a platform in one end of the casting house. Pig iron and coke are hoisted to the level of the cupola by an outside elevator, located in the stockyard alongside the railroad track, and are conveyed inside the building over a bridge. The converter stands in an angle of the building, so that its nozzle is pointed outside the building during the blowing process. A suspended trough runs from the cupola floor to the converter for the conveyance of the liquid metal. The blown steel is poured into a ladle which holds the entire charge. A compressed-air hoist, suspended from an overhead track, enables the ladle to be handled with ease. When it is run over the flasks,

There is also an engine for general power. The converter now in use takes a charge of 4400 pounds. This is blown about 12 minutes, when the vessel is tipped over and the ferromanganese, &c., added. The blast is directed upon the charge from above, differing in this respect most radically from Bessemer practice. After the vessel has been tipped the steel is allowed to remain in the converter for about 15 minutes until the reaction ceases. The deliberation with which the casting proceeds is remarkable as compared with the rapidity necessary in handling other kinds of steel. The Robert steel is exceedingly liquid. When it is poured into the molds it runs like iron, coming up easily through the vent holes, which are only $\frac{3}{8}$ inch in diameter and 8 inches deep. Another peculiarity of the steel is that it is less inclined to form skulls than other steel. This is especially noticeable in the ladle, which is as easily cleansed after pouring a heat as though it had been used for iron. The metal produced is very tough and free from blow-holes. Even pieces



PLAN OF THE WORKS OF THE FOWLER STEEL CAR WHEEL COMPANY.

machine, which has been illustrated and described in *The Iron Age*, was designed for the purpose of densifying the rim of a solid steel car wheel, so that the tread would be rendered as wear-resisting as though a steel tire had been shrunk on it. In this way it was expected that a solid car wheel would be made that would be much tougher than a cast-iron wheel, and considerably cheaper than a built up wheel with a separate steel tire. The rolling machine proved to be a success, but the company encountered difficulties of a most discouraging nature in endeavoring to secure solid steel castings or wheel blanks. They were thus impelled to put up their own steel works, so as to control that important part of the manufacture. After much investigation, the Robert process was selected as offering the most promising results for their purpose.

With this preliminary explanation a plan of the works is herewith presented. The general arrangement of the plant is sufficiently unique to be described in detail. It is situated at Ninety-third street and Stony Island avenue, near South Chicago, and a spur track from the Belt Railroad runs into the works, serving the double purpose of taking in material and shipping out the finished product. By the plan adopted in laying out the works

which are located in shallow pits, the steel pours into them through the bottom of the ladle. As soon as the castings are cool enough to be moved, which is in about half an hour, they are taken by similar hoists from the pits, the flasks are knocked off and the castings are then lowered into a soaking pit, or, more properly, a cooling pit. When cold they are run into an adjoining room, where they are put into a lathe to have the gates cut off. By means of a narrow-gauge railway they are then taken across to the rolling mill, heated in a special furnace, hoisted by pneumatic hoists to a carriage which delivers them to the rolling machine, rolled to the desired diameter, and then taken by pneumatic trolley cylinders on overhead tracks to annealing pits, in which they lie for six days, when they are cleaned and placed in the warehouse for shipping. The floor of the warehouse has been arranged on a level with the floor of the freight car for convenience in loading.

It will be observed from the diagram that the engine house has been equipped with motive power for distinct purposes. An upright blowing engine furnishes the blast for the converter. The Root blower for the cupola has its own engine. A Norwalk air compressor supplies the power for the hoists in use throughout the works.

knocked off the heads show no cavities, but on the contrary are remarkably solid and even in texture, with a bright fracture.

The *Locomotive* says the number of explosions of boilers and casualties therefrom last year were 226, against 180 in 1889, as follows:

1. Saw mills and other wood-working establishments	75
2. Locomotives	25
3. Steamships, tugs and other steam vessels	16
4. Portable boilers, hoisters and agricultural engines	16
5. Mines, oil wells, collieries	19
6. Paper mills, bleacheries, digesters, &c. ..	3
7. Rolling mills and iron works	13
8. Distilleries, breweries, dye works, sugar houses and rendering works	3
9. Flour mills and grain elevators	5
10. Textile manufactories	1
11. Miscellaneous	50
Total	226
Persons killed	244
Persons injured	351

Peter Boyd, manager of the tube department of the plant of the Riverside Iron Works, has recently invented an improved die and mandrel for welding pipe couplings which he now has in successful operation. Heretofore all couplings were welded straight, and afterward tapered

be machinery, but under the new process they are made on a tapered sectional mandrel while in the dies of the hammer, thus saving the work of the tapering-machine. The cost of manufacture is said to be considerably reduced by this process.

The Jenkins Power Hammer.

The hammer illustrated on this page, while not new, has been the subject of important improvements during the past year. The makers say that before pressing the hammer on the market, they desired to thoroughly convince themselves as to its utility and durability, and having done so, they now desire to call attention to its merits.

The method of cushioning is that controlled by the makers, and claimed by them to be the best yet devised. It consists of

claimed, is always under complete control of the operator by means of the treadle.

Jenkins & Lingle of Bellefonte, Pa., the makers of this hammer, call attention to the method of connecting the helve to the ram, as it is claimed that making connection to the ram is the weak point in upright hammers as heretofore constructed.

Relative Value of Gold and Silver.

It is time that the theory, to which so many cling, that the precious metals receive their value from the mint stamp, and that all that is needed to keep a given amount of silver at par with a given amount of gold all over the world is for the governments to agree to such a ratio, and stamp the metal accordingly, was exploded. No treaty nor the combined legislation of all the people on the earth

or 54,000,000 ounces per annum, and keep it off the market, issuing greenbacks for its payment. As the total production for the year in the United States had been only 50,000,000 ounces, and 8,000,000 to 10,000,000 ounces are used annually in the arts, it was thought that this grand job, relieving the market of all its production, and inflating the currency by the issue of so large an amount of paper, would put the price of the metal up to \$1.29½ per ounce, which would be its par in gold. The market did respond, of course, to this scheme for awhile, and the price, which opened at \$0.96 per ounce, ran up to \$1.21, as the Treasury took more than the output from all the mines; but further supplies were offered from abroad, and it has dropped back to \$0.97½ per ounce. In the whole world the annual yield of gold, which in round numbers was 200,000 kg. nearly 40 years ago, is now about 180,000 kg., while silver, which then yielded annually about 900,000 kg., has increased to 4,000,000 kg.

Central Iron Freights.

At the meeting of the Central Traffic Association, held in Chicago on March 11, the Freight Committee agreed that the rates on articles of manufactured iron and steel be made between the points in the territory of that association on the basis of 17½ cents per 100 pounds less than carload lots and 15 cents per 100 pounds carload lots from Pittsburgh to Chicago, to take effect on March 30, but not to extend beyond August 31, 1891. The territory of the Central Traffic Association includes Buffalo, N. Y.; Salamanca, N. Y.; Pittsburgh, Pa.; Wheeling, W. Va., and all points west of those cities. In accordance with the above, the fifth and sixth class rates, per 100 pounds, on articles of iron and steel manufacture from Pittsburgh to points given below are as follows:

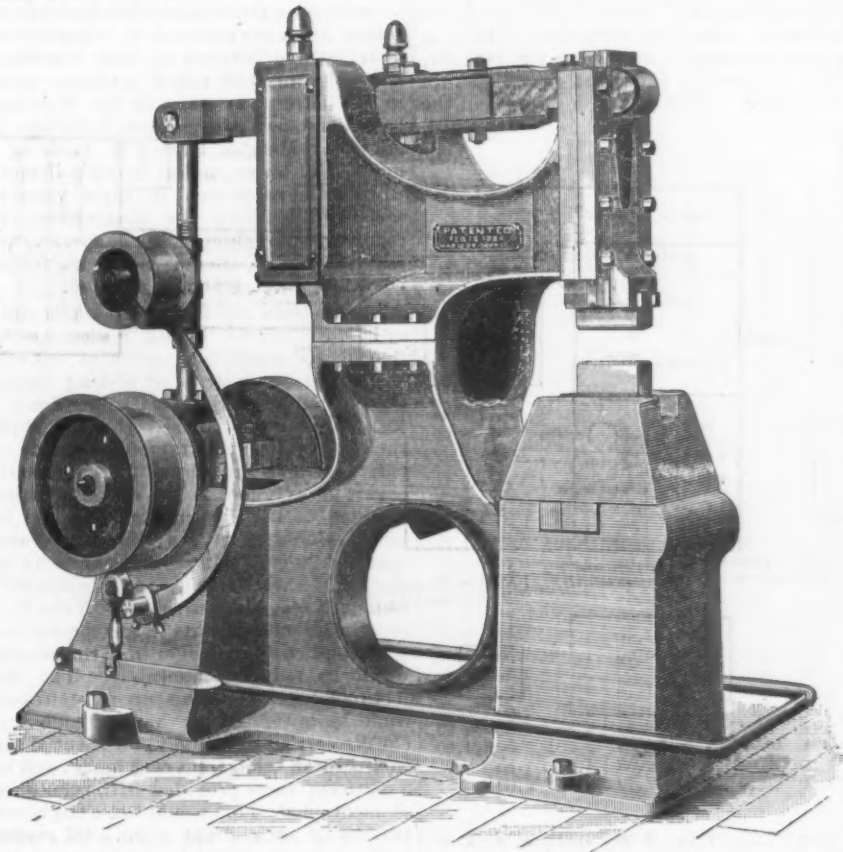
Pittsburgh to—	Less than carload lots.	Carload lots.
Chicago	\$0.17½	\$0.15
East St. Louis .....	.22	.18½
Cincinnati .....	.15	.12
Columbus .....	.11	.9
Louisville .....	.19½	.16
Cleveland .....	.9	.8
Indianapolis .....	.15	.13

The rate per 100 pounds on the same articles from the Mahoning and Shenango valleys to the points named below will be as follows:

Mahoning and Shenango valleys to—	Less than carload lots.	Carload lots.
Chicago	\$0.15	\$0.13
East St. Louis .....	.20	.16½
Cincinnati .....	.13	.10
Louisville .....	.17½	.14
Indianapolis .....	.14	.11
Cleveland .....	.4½	.4
Columbus .....	.9	.8

On and after March 30, 1891, the rate on pig iron from Pittsburgh to the Mahoning and Shenango valleys will be 70 cents per gross ton, instead of 80 cents, the present rate. Between the same points the rate on muck bar, scrap iron, billets, blooms and skelp iron will be 85 cents per gross ton, instead of 95 cents, the present rate. Between the same points the rate on cinder and scale will be 65 cents per gross ton, instead of 70 cents, the present rate. On and after the same date the rate on pig iron from Rankin Station, Pa., to the same points will be 85 cents per gross ton, instead of 95 cents, the present rate. On the same date the rate on muck bar, scrap iron, billets, blooms and skelp iron will be \$1.02 per gross ton, instead of \$1.12, the present rate.

The rate on cinder and skelp iron between the same points will be reduced from 87 cents to 82 cents per gross ton. From Braddock, Bessemer and McKeesport, Pa., to the Mahoning and Shenango



JENKINS POWER HAMMER.

four rubber cushions, two placed above, and two below the fulcrum bearing of the helve. The tension of these cushions is controlled by bolts passing through them. The fulcrum bearing is in the form of a crosshead provided with a center pin, on which the helve is pivoted, and pockets for the cushions. This crosshead being free to move up or down, and resting on two of the cushions, and being held down by the other two cushions, yields to the action of the ram as the necessity of the blow requires. This makes a substantial fulcrum bearing for the helve, and one that relieves the main frame from shock or jar.

The connection between the ram and helve is extremely simple, and is a matter of surprise that it was so long in being adopted. It consists in simply passing the wood end of the helve into an opening in the ram in which it fits loosely. This construction does away with the necessity of the use of steel springs or leather straps, which the makers claim proved to be inefficient. The force of the blow, it is

could, according to the *Journal of Commerce*, effect such a maintenance of an assumed ratio not sustained by natural laws. The depreciation of silver was owing to its increased production, and not to a conspiracy for its "demonetization." Those who held the contrary opinion clamored for the restoration of the silver dollar to the list of United States coins, and insisted that this was all that was necessary to bring the \$71½ grains of pure silver contained in the dollar of 412½ grains nine-tenths fine up to a par with its face value.

The Secretary of the Treasury was ordered to purchase at least \$2,000,000 worth of silver every month and to coin it at the mint. This was done, and from 1878 to date 400,000,000 of these pieces have been struck without contributing in any perceptible degree to the result that was promised. Disappointed in this, the speculators again sought the aid of Congress, and at the last session the Secretary of the Treasury was instructed to buy 4,500,000 ounces of fine silver per month,

valleys the rate on pig iron will be reduced from 95 cents to 85 cents per gross ton. Between the same points the rate on muck bar, scrap iron, billets, blooms and skelp iron will be reduced from \$1.15 per gross ton to \$1.05 per gross ton, and between the same points the rate on cinder and scale will be reduced from 90 cents per gross ton to 85 cents per gross ton.

The Freight Committee agreed March 11, 1891, that the minimum rates named herein on pig iron and other articles named in the following list, in carloads of 12 tons or over, from and to the points specified, take effect March 30, 1891, but not to extend beyond August 31, 1891:

Pig iron, Spiegeleisen, Manganese ore, Muck and puddle bars, Iron and steel blooms and billets, Scrap iron, Scrap steel, Scrap tin, Borings, Old rails, Old car wheels and axles, Wire rods, Mill cinder and scale, Molding sand, Cast-iron pipe.	Per gross ton.	Per net ton.
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A Plea for Better Building.

One of Pittsburgh's leading iron makers has placed eloquently before the public, through the columns of the *Dispatch*, a plea for improved methods in building construction, from which we quote:

In your plea for "better building" you advocate very properly, among other means, a larger use of iron joist, terra cotta fillings, &c., and this is very well, but this particular recommendation as a mitigation of fire loss cannot apply to, by far, the larger share of buildings. Limitation to this system would be so largely prohibitory that general progress would be impeded under present conditions. We must continue to use wood, but we must continue to use it better. Something (or a good deal) might be said about how even the iron-joist filled system has failed frequently in fulfilling its promise of absolute safety, but it is not to the deficiencies of this class of buildings, which only corporations and capitalists can afford, but in the common every-day structures, such as ordinary people can own or pay rent for, that the greatest and most general reform is needed. This is to be simply in the

Let us suppose a breath of fire strikes such a ceiling. The plaster strips instantly, and there, just to hand, is what the heretofore incipient blaze is looking for, kindling properly placed. Taking quick hold, the flames rush along the joist to partitions, where wood-lathed vertical flues add fresh fuel of the same favorable nature, and thence, quickened by the direction, up to attic and roof spaces, where the destruction is complete. All done so rapidly that inadequate warning only is had. Is not this the story over and over again? The story of the Montreal Asylum, of public institutions, school buildings innumerable? To the fatal and facile exposure through stripping of the plaster must be credited a large share of disaster. In itself, to have such tinder-like combustible as wood lathing as part of a building is bad, but to have it fail of its function at the critical time is extremely bad. In all fire-proof buildings wood lathing is completely tabooed. Where plastering must be carried on other than solid masonry, if hollow brick are not used it is applied to metal lathing fastened on iron studding. Examples of such minor partitions made in the latter way exist in the Westinghouse and new Government buildings in our city. Metallic lathing is made in a number of forms, and as frequent demonstrations have proven its great value in successfully filling the desideratum of carrying unflinchingly the admirable fire resistant named, there is no excuse for its not being more generally adopted.

If partitions and floors were made more or less invulnerable by any means, just to that degree would they serve as cut-offs and retard fire instead of adding immediately and at touch "fuel to the flame." As to the much-abused elevator shaft there is absolutely no difficulty outside of passenger ones in providing automatic covers at each floor. It is only a question of some outlay. Open staircases are to be considered nearly as bad as elevator openings in conveying fire from story to story. If these were inclosed in the old-fashioned way and provided with the fire-resisting doors Mr. Atkinson prescribes at top and bottom, danger from this source would be reduced immensely. The objectionable total closing up of staircases could be mitigated by having such enclosure carried down only sufficiently far to give head room from each story, and to a platform there provided with such door as mentioned. This would leave the lower portion of each flight open. Of course such inclosure should be constructed on lines indicated for safety.

Walls should be true "fire walls" wherever possible. The splendid fire wall of the Hamilton Building, at the Masonic Hall fire, certainly prevented a most disastrous conflagration. The "defective flue" is only to be mentioned with reprobation, and in all conscience ought not to exist. The use of the automatic sprinkler of such proven success in New England should be more general as a safety provision. These are a few of the directions not costly of attainment wherein we might build better in our every-day, commonplace structures, and thus diminish in good measure the enormous annual fire loss of \$125,000,000, which is just so much of our national treasure and financial ability gone irretrievably. Architects and builders know how to do better, but between limitations imposed at first and the inevitable razeeing process, these worthy people have the ground taken from under them. Unfortunately, there is nothing showy about "better building" in a slow-combustion sense, and we go ahead, build up the old way, burn down, and occasionally take our innocent neighbor with us. But this latter raises an ethical question too broad for discussion, even if space and the editor permitted.

From	Buffalo, N. Y.	Pittsburgh, Pa.	Mahoning Valley, Ohio; Shenango Valley, Pa.	Cleveland, Ohio.	Hocking Valley, Mos- hala, Shawnee, Ohio.	Zanesville, Ohio.	Columbus, Ohio.	Jackson, Wellston, Ohio.	Ironmont, Ashland, Hang- ing Rock, Ohio.	Detroit, Mich.
To										
Chicago, Ill.....	2.50	2.50	2.00	1.80	2.00	2.00	1.80	2.00	2.00	1.60
East St. Louis, Ill.....	3.00	2.85	2.35	2.35	2.40	2.40	2.20	2.40	2.40	2.15
Louisville, Ky.....	2.75	2.60	2.20	2.20	2.00	2.00	1.80	2.00	2.00	2.15
Jeffersonville, Ind.....	2.75	2.60	2.20	2.20	2.00	2.00	1.80	2.00	2.00	2.15
Peoria, Ill.....	2.75	2.75	2.25	2.25	2.25	2.25	2.05	2.25	2.25	2.15
Detroit, Mich.....	1.35	2.00	1.60	1.20	1.40	1.40	1.20	1.60	1.60	....
Indianapolis, Ind.....	2.30	2.00	1.60	1.60	1.40	1.40	1.20	1.40	1.40	1.60
Cincinnati, Ohio.....	2.15	1.80	1.40	1.40	1.20	1.20	1.00	1.00	1.00	1.60
Columbus, Ohio.....	1.90	1.70	1.30	1.20	.75	.75	....	1.00	1.00	1.50
Toledo, Ohio.....	1.35	1.75	1.35	1.10	1.30	1.30	1.10	1.50	1.50	.75
Joliet, Ill.....	2.50	2.50	2.00	1.80	2.25	2.25	2.05	2.25	2.25	1.60
Fort Wayne, Ind.....	2.00	2.00	1.60	1.40	1.60	1.60	1.40	1.60	1.60	1.40
Logansport, Ind.....	2.50	2.20	1.80	1.60	1.80	1.80	1.60	1.80	1.80	1.50
LaFayette, Ind.....	2.50	2.50	2.00	1.80	2.00	2.00	1.80	2.00	2.00	1.60
Terre Haute, Ind.....	2.50	2.50	2.00	1.90	1.90	1.90	1.70	1.90	1.90	1.80
Vincennes, Ind.....	2.75	2.70	2.20	2.20	2.00	2.00	1.80	2.00	2.00	2.15
Evansville, Ind.....	3.00	2.85	2.35	2.35	2.35	2.35	2.15	2.35	2.35	2.35
Grand Rapids, Mich.....	2.50	2.50	2.00	1.80	2.00	2.00	1.80	2.00	2.00	1.60
Jackson, Mich.....	2.00	2.00	1.75	1.55	1.75	1.75	1.55	1.85	1.85	....
Lansing, Mich.....	2.10	2.25	1.90	1.70	1.90	1.90	1.70	2.00	2.00	....
East Keokuk, Ill.....										
East Hannibal, Ill.....										
East Louisiana, Ill.....	3.25	3.25	2.75	2.50	2.75	2.75	2.55	2.75	2.75	2.50
East Burlington, Ill.....										
Quincy, Ill.....										
Springfield, Ohio.....	2.15	1.80	1.40	1.30	1.10	1.10	.75	1.00	1.00	1.50
Dayton, Ohio.....	2.15	1.80	1.40	1.30	1.10	1.10	.90	1.00	1.00	1.50
Richmond, Ind.....	2.20	2.00	1.60	1.60	1.30	1.30	1.10	1.30	1.30	1.60
Cleveland, Ohio.....	1.20	1.25	....	....	1.30	1.10	1.10	1.50	1.50	1.20
Cairo, Ill.....	3.25	3.25	2.85	2.75	2.60	2.60	2.40	2.50	2.50	2.75

It was further agreed that notices should be printed in tariffs of the railroad companies limiting the duration of these rates as above.

Two new vessels, the *Didam* and the *Dubbeldam*, will be added to the fleet of the Netherlands-American Steamship Company, running between New York and Rotterdam. They measure 4000 tons, and are 320 feet long. They are fitted with triple-expansion engines, and will, it is expected, beat the best boat the line has in service now by several days.

The city councils of Buffalo and the Builders' Exchange are co-operating in a plan for establishing a manual training school.

Seventy-two heavy guns, including two 12-inch for coast defense, are in process of construction at the Washington Navy Yard.

direction of more extended use of "slow-combustion" methods. Any feature of construction that resists fire and retards its more than geometrical progression it is to be welcomed as a step in the right direction.

There is in universal use in all classes of structures a most perfect fire-resisting medium in the shape of plastering—indeed, it is the only non-combustible element entering into the make up of the larger portion of the houses of America to day. Common plaster—better still, good plaster—is not surpassed as a fire opposer, but its shortcoming in this regard is not due to any inherent quality, but simply to its method of application on the flimsy and, as we shall see, treacherous foundation of wood lathing. It certainly is the commonest thing to find ceilings cracked and loose. Investigation would develop the fact that the keying of the plaster was more or less broken, and the latter may, and does, come down on the slightest provocation.

Double-Ended Punch and Shear.

Herewith we illustrate one of a new line of punching and shearing machines recently designed and built by the E. W. Bliss Company, Limited, of Brooklyn, N. Y. These machines are intended for general punching and shearing work, and can be charged to suit requirements of boiler makers, architectural iron works, bridge builders, rolling mills, railroad shops, and, in fact, any manufacturers who require machinery for punching or shearing iron, steel or metals of any kind. They are made single or double, and can be punch and shear combined, or can have both sides either punches or shears. They can be made any depth of throat from 6 to 48 inches, and will punch a hole from $\frac{1}{4}$ inch diameter in $\frac{1}{4}$ -inch iron to $2\frac{1}{2}$ inches diameter in $2\frac{1}{2}$ -inch iron. Will shear a section $\frac{1}{2} \times \frac{1}{2}$ inch to 2×18 inches wide, or 4 inches square. The shafts are made very heavy. The heads are provided with patent stops, allowing the punch to rest on the work while the machine is running, thereby providing accurate ad-

retary of the the company says new plant will be the largest and most extensive in the world, and be in full operation in September next, giving employment to 1400 hands. The burned establishment turned out 40 tons of binder twine a day and a large amount of cordage, but the new plant will greatly exceed this output.

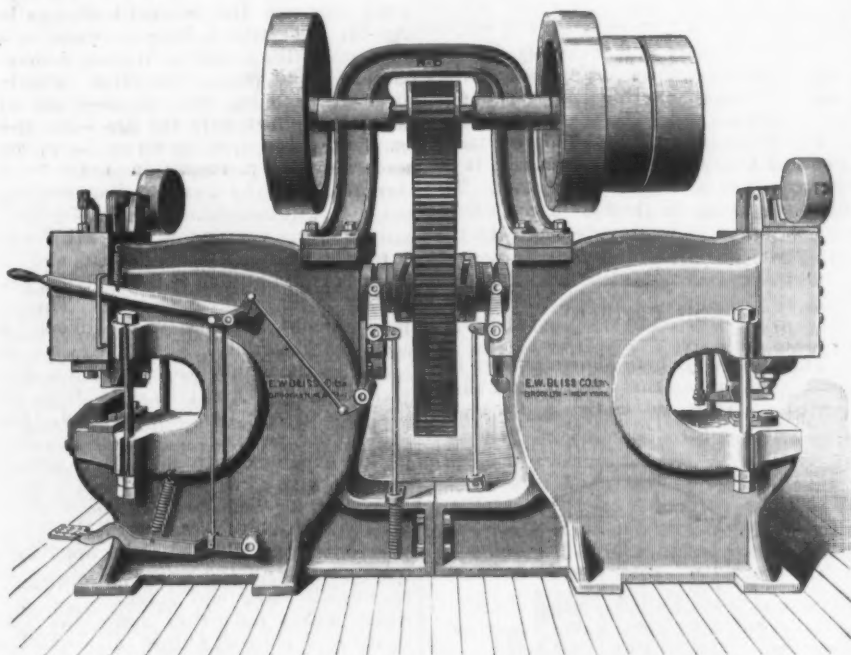
Changes of Population in Pennsylvania.

One of the latest census bulletins gives the population of Pennsylvania by counties, showing the increase and decrease in each since the census of 1880. While the inhabitants of the whole State have increased from 4,282,891 in 1880 to 5,258,014 in 1890, the population of some of the counties has decreased or remained nearly stationary within this census period. The 12 counties in which population has declined are devoted almost exclusively to agriculture; but the decline of population in some of them is due to

as a consequence, there is a great deal of distress among the working people of the mining regions.

The Depression in the Cut Nail Trade.

In our last issue we made mention of the fact that a meeting of cut nail manufacturers had been held in the rooms of the Chamber of Commerce in Wheeling, W. Va. Another meeting took place on Wednesday, the 18th inst. It was only fairly well attended and nothing was accomplished. There is probably no other line of business that is in such sore straits just now as the cut nail business, and it has been in this condition for many months past. Efforts have been made to bring about an improvement, but as yet they have proved futile. The several meetings of the manufacturers that have been held lately were for the purpose of arranging some way by which the business can be made profitable. The advent of the wire nail and the rapidity with which it has grown in favor has been the principal cause of the demoralized condition in which the cut nail business has been placed. Overproduction has also done its share, and the future outlook for this industry is certainly discouraging. In the Wheeling district hundreds of thousands of dollars have been invested in nail plants, which at one time were quite profitable and earned a very fair interest on the investment. In their efforts to meet the competition of wire nails the cut nail manufacturers have been compelled to sell their product at such figures as to entirely preclude the possibility of a profit. It will, indeed, be a Herculean task to devise a plan by which the cut nail business can again be placed on a paying basis.



DOUBLE ENDED PUNCH AND SHEAR.

justment of work. Each side is provided with a powerful, independent clutch, so they can be run separately or together, as desired. The machine, as illustrated, is known as No. 6; depth of throat 24 inches, and will punch $1\frac{1}{2}$ -inch hole in $1\frac{1}{2}$ -inch iron, and will shear $1\frac{1}{2} \times 8$ inches wide, or 2 inches square, and weight complete, 21,000 pounds.

The Lighthouse Board have awarded the contract for the construction of a composite lightship for service at the Columbia River Bar to the Union Iron Works of San Francisco at their bid of \$60,150. The board have awarded the contract for the construction of three lightships for service on Lake Michigan to the Craig Shipbuilding Company of Toledo, Ohio, at their bid of \$40,800 for the three vessels.

The Elizabeth Cordage Works, in New Jersey, owned by the National Cordage Company, and among the most extensive in the country, were burned last week, entailing a loss of nearly \$500,000. Much valuable machinery and large quantities of material were destroyed, but other factories can be run extra time until the work of reconstruction shall be complete. The sec-

the exhaustion of their wells of potroleum. The oil-producing population has shifted with the exhaustion of the old and the development of new territory. Outside of Philadelphia and Allegheny County and the counties surrounding Philadelphia, the largest gains in population are in the anthracite and bituminous coal regions of the State. In the eight coal-producing counties the growth of population has been upward of a quarter of a million within the last 10 years. In some of these counties the increase of inhabitants has been unduly and unwholesomely stimulated by the coal corporations in importing cheap labor from Eastern Europe. Population has increased in excess of the opportunities of remunerative employment. Skilled miners, who once earned good wages, have been supplanted by Bohemian and Russian peasants, who never saw the mouth of a mine until brought to this country. With the frequent stoppages of labor, in order that the corporations might maintain prices of coal against consumers, two miners do not earn much more in a year now than one earned in a former period. Industrial production, though increased, has not kept pace with the unhealthy growth of population; and,

At one of W. A. Slater's mills at Jewett City, Conn., a trial was made on the 11th inst. of one of the Almy water-tube boilers in connection with a Knowles duplex pump—steam cylinders, 11-inch diameter, 12-inch stroke—to be used in case of fire. Steam was raised very quickly from cold water; 5 pounds pressure being shown in 2 minutes 35 seconds, 10 pounds in 3 minutes 35 seconds, and so on up to 70 pounds pressure, which was reached in 6 minutes 52 seconds. The rise of steam pressure in the last 60 seconds was especially noticeable, as will be seen by the following:

At 6 minutes 5 seconds 50 pounds pressure was shown.
At 6 minutes 17 seconds 55 pounds pressure was shown.
At 6 minutes 28 seconds 60 pounds pressure was shown.
At 6 minutes 40 seconds 65 pounds pressure was shown.
At 6 minutes 52 seconds 70 pounds pressure was shown.

At 70 pounds pressure the pump was started, and was run from 300 to 400 strokes per minute, delivering the water through four $1\frac{1}{2}$ -inch nozzles at 80 to 100 pounds water pressure with ease.

The Mason Machine Works, Taunton, Mass., have just completed a core saw, as an experiment for a mill owner of Lacrosse, La., for the purpose of boring out barrels from a solid log. It is something entirely new, and can turn out a barrel complete in one minute. The saw was given a trial in the carpenters' department one day recently, and worked successfully, boring out a core $10\frac{1}{2}$ inches in diameter and $21\frac{1}{2}$ inches long in 30 seconds. This saw is made of wrought iron, in the shape of a barrel, with steel cutters distributed a certain distance apart about the cylinder. A stock company, with a capital of \$100,000, will be formed to manufacture the new saw and erect shops in Lacrosse, La.

The Mason Works will get out the drawings and patterns for all sizes of the saw, which will bore out all sizes of barrels.

The Situation in San Francisco.

The long-continued strike, which has now lasted over a year, has interfered materially with the foundry business in this city. The total consumption of imported pig iron during the year was 20,697 tons. This was 2580 tons less than the consumption of 1889. The molders' strike, however, was not the only one that disturbed the even tenor of the employers' way in the iron business. There was also a nail-makers' strike in our only nail factory which did its part toward restricting the total value of our manufacturing output. The only material change in the attitude of parties in the molders' strike was the withdrawal of Steiger & Kerr from the Engineers' and Foundrymen's Association. Trouble between the molders and this firm was one of the original causes of the strike. Mr. Kerr, however, had the misfortune to kill a participant or a spectator—it will never be known which—when an attack was made on himself and two non-union molders whom he was trying to protect, and it is currently reported that the firm withdrew so that the Molders' Association should not fight too bitterly against Mr. Kerr on his trial. Mr. Kerr himself is a pleasant gentleman, one of the last to be taken for a murderer, and has always been popular with the men.

The other foundries engaged in the strike say they are doing well enough with non-union molders and that they have all they need. Every now and again a non-union molder is induced to leave his employment and to return to the place whence he came, but his situation is generally filled by another molder. There is no doubt, however, that the strike has interfered a great deal with the foundry business and injured it not a little. Individual manufacturers or corporations, such as the Union Iron Works, have been affected less, but this is exceptional. A good deal of work has been sent East and the way thus opened for competition with the local manufacturers, which would have come in due time, but which the strike has hastened. Still, it is hard to see how the foundrymen could have acted differently. The molders were strong and aggressive, and the manufacturers had one demand after another made on them till at last they had to fight. It was concluded that it had better be fought out before the molders were still more firmly entrenched in their position. It was generally conceded that they formed the strongest trade union in the city, and, with the exception of the printers, the most intelligent. They had the sympathy and support of the molders' organization throughout the United States, as well as that of the federated trades of this city. Some of them have found other occupations; some have been kept barely alive by the small weekly sum paid by the union; many, especially those having large and helpless families, have been reduced to very hard straits. It must be confessed that they have sustained the contest with a zeal and a courage worthy of a better cause. One of the less fully provided had a short while since found starvation staring himself and his wife in the face and went back to work. He was assaulted and seriously injured, it is supposed by strikers or their sympathizers. This and other previous assaults have lost the molders much sympathy from those who did not or could not enter into the true merits of the strike, but merely looked upon it as a contest between labor and capital, where the latter must necessarily be in the wrong. The molders still, however, keep

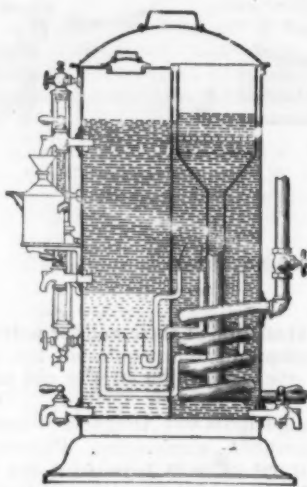
up a bold front and on the occasion of the recent reception of President Gompers, made a brave showing. It can be no longer concealed that the foundrymen have triumphed, though at a great cost to themselves. The molders have lost in wages alone not less than \$100,000.

Imports of iron and steel and their manufactures have been comparatively heavy since the opening of the year. Of pig iron we have had 2339 tons of foreign and 250 tons of Eastern, against 811 tons of foreign and 635 tons of Eastern for the same time in 1890. Oregon has contributed 220 tons. The market is quotable at \$27 and \$29; to arrive at \$28 and \$30, spot. Imports of scrap for use in the rolling mills, &c., have been for January and February 1648 tons. Imports of tin plate have been 64,082 boxes, against 185,199 for the same time last year. This is much in favor of holders this year. A year ago the price here was \$4.85 and \$4.95 a box. To-day it is \$6.50, caused partly by the increased duty. Cannons and others bought heavily before the first of last October, in anticipation of the increased duty, and are therefore well stocked up, and for various reasons it is thought that the demand for cans will be less than it was a year ago. Pig tin, of which for January and February we have imported 345,300 less, as against 251,864 pounds for the same time last year, is dull at 21½ cents.

The prospects are for a good year in the iron and hardware trades, especially if the strike should be brought to a close. The rains will bring in their train magnificent crops, and on agriculture is based the true prosperity of California to-day.

Oil Purifier.

The oil purifier here shown purifies and cleanses the oil so that it can be used repeatedly. It is automatic in its action



The Keystone Oil Purifier.

and, as will be seen by examining the cut, is very simple in construction. The purifier is centrally divided by a partition. The dirty oil is thrown into the side containing the steam coil, when it immediately becomes hot and the dirt is precipitated. The heated oil then passes through tubes to the other side of the partition and rises, drop by drop, through the water, on the surface of which it collects, thoroughly cleansed and ready for use. This apparatus is made by the Pennsylvania Machine Company, of 31 North Seventh street, Philadelphia.

The business men of Philadelphia have organized a movement to protect themselves against the discriminations of those railroad companies which carry buyers

from the West to New York, through Philadelphia, for less money than they will carry them from the West to Philadelphia, and an anti-discrimination bill is being pushed in the legislature.

Progress of the New Ships.

The reports show a satisfactory progress on nearly all the ships building for the Navy. Work on the Texas, at the Norfolk Navy Yard, however, is, according to a Washington letter, slow. The frames are in place above the protective dock, but it will be a long time before the vessel is ready for launching. The delay is due to the long discussions to which the plans have been subjected in the Board of Bureau Chiefs at various times, and to the rejection of material. On one occasion over 200 tons of steel plates were returned to Pittsburgh on account of failure to pass the tests at Norfolk, and work was delayed while a new shipment was prepared. On Cruiser No. 12, building at Cramps', rapid progress is reported. The patterns have been made for stem and stern post. The Loring Works at Boston have received five payments on Cruiser No. 11, not having made, however, the progress of the Columbia Works of Baltimore, where the companion vessels, Cruisers 9 and 10, are more than half finished. The first payment has been made on the three tugs, of which the Navy, now more than ever, stands in great need. According to the terms of the contract, the tugs will be finished by next January, although the contractors may ask for an extension of time. The gunboats and the Ammen ram, building at Bath, Maine, Iron Works, will be done on time. There is no complaint, as formerly, of difficulty in securing material. The plates are arriving on time, and, while there has been no decrease in the severity of the tests, few instances of rejection are reported. One shipbuilder succeeded, for the first time in his experience, in making a penalty contract with a Pennsylvania steel founder for material. This condition of affairs is gratifying to the Secretary of the Navy, who a few months ago was apparently confronted with the refusal of steel men to furnish plates and forgings. A fact which makes the matter more important to the steel industry is that this condition has come about without a modification of the Department's specifications, as had been insisted upon in some quarters as necessary.

The following shows the number and value of locomotives exported from this country since 1875:

Year Ending	No.	Value.	Year Ending	No.	Value.
June 30. 1875....	79	\$896,639	June 30. 1884....	282	\$2,819,946
1876....	44	561,559	1885....	85	742,403
1877....	53	568,302	1886....	52	333,393
1878....	98	1,016,974	1887....	58	373,245
1879....	73	567,802	1888....	56	407,014
1880....	60	466,313	1889....	144	1,237,149
1881....	99	893,123	1890....	161	1,280,606
1882....	133	1,455,717			
1883....	219	2,219,081	Total..	1,696	\$15,929,266

The smallest twin-screw steamship that ever came into this port is the Holquin, with a cargo of fruit from Cuba, in five days and a half. The Holquin was built in Glasgow by Murdock, Murray & Co., and is 200 feet in length, 28 feet beam, 19 feet depth, and has a draft of 14 feet. Triple-expansion engines give her a sustained sea speed of 14 knots per hour.

The giant strides made by Minnesota in the past decade are shown in the increase of assessed values. The State Auditor's report just issued shows that the State assessment in 1881 was a little less than \$300,000,000. Now it is a little over \$600,000,000.

THE WEEK.

The experiment of the Disstons and others, of Philadelphia, who purchased extensive swamp lands in Florida for conversion into sugar fields is said to have been entirely successful. A correspondent says that thousands of acres of once submerged lands are now bearing upon their fertile surface immense fields of sugar cane and groves of tropical fruits. One of the companies formed by the original buyers, the Okechoobee Drainage Company, have acquired by their work 1,200,000 acres, and built a large sugar mill.

The Missouri Legislature has passed an anti-trust bill making it a misdemeanor punishable by a fine of \$100 a day for each day that a company or corporation is a member of a trust which has in view the raising of prices.

The London Times protests against the extension of the Congo Free State over the Nile region.

To what extent the export trade of this country this year is due to the preponderance of cotton exports may be seen from the statement that, including stocks left over at ports and interior towns from the last crop, and the number of bales brought into sight thus far from the present crop, the supply to date is 7,753,921 bales, against 6,952,092 for the same period last year.

One of the strongest steamship corporations known as the Allan Line, has decided to run steamships between New York and Glasgow, beginning May 1.

The annual banquet of the Boston Paper Trade Association last week was fully attended. Ex-Congressman Russell said that English manufacturers are adopting our methods and erecting machinery in Sweden, where there is water-power and wood in abundance, together with cheap labor, which would go far to neutralize advantages America now possesses as an export country.

The Michigan Salt Association have authorized the sale of their effects, throwing 1,000,000 barrels of salt on the market.

According to the latest census bulletin there are 400,000 acres of grape-growing districts, of which over 300,000 were in bearing in 1889, producing 572,000 tons of grapes—267,000 for table use, 240,000 for wine, 41,000 for raisins, and 23,000 for other purposes. The wine product is estimated at 24,300,000 gallons and the raisin yield at 1,300,000 boxes of 20 pounds each, while it is predicted that the young raisin vineyards in California will increase this yield within the next five years to 8,000,000 or 10,000,000 boxes. The capital invested in viticulture is estimated at \$155,600,000, and the number of persons employed at more than 200,000.

An iron bridge, weighing 180 tons, was moved one block in Chicago by sinking two scows beneath it and then pumping out the scows. The transportation was made with ease and safety.

Investments in electric plants in America now aggregate \$600,000,000, according to Thos. A. Edison. Ben Franklin, with his kite, started the boom.

Washington advices indicate the probability that new customs regulations will soon be enforced in the transit of merchandise from Canada. Detailed invoices must accompany shipments in bond across the United States to a port of export, and it is thought that steps will be taken to interfere with the transportation of goods from Asia by way of the Canadian Pacific steamship lines from San Francisco to Vancouver for shipment across the Continent over the Canadian Pacific Railway.

Many conjectures are indulged respecting the amount of freight likely to be transported by rail in the coming months, and the effect of opening lake navigation. Lessened railway earnings is possible.

The Postmaster-General finds some difficulty in carrying the new postal subsidy law into effect, partly on account of the ambiguous language used in speaking of the rate of speed and the meaning of the term "mile." Again it is said that if Congress were safely Republican for a number of terms to come, Mr. Wanamaker probably would not hesitate to go ahead with contracts for new lines at the same time that he made liberal allowances to the old ones. There is nothing in the law apparently to prevent his exceeding in contracts for the future the appropriation of \$1,250,000 made for the coming fiscal year in the Post Office appropriation bill. The entire subsidy programme, however, may encounter strong opposition in the next House of Representatives, and the Postmaster-General could not afford to submit contracts of doubtful authority to Congress for the necessary appropriation.

Shops will be erected on land recently purchased at Reading, where the Reading Railroad Company intend to build all the cars in use on their system of roads.

Secretary Blaine and the Spanish Foreign Minister, it is stated, have practically concluded a commercial arrangement that will open the ports of Cuba to the free entry of American products in exchange for a free market in this country for Cuban sugar. The only point not fully agreed upon is in relation to tobacco, Spain urging a reduction of our duties on Cuban cigars and tobacco, but both parties are so anxious to agree that agreement is probable. A suggestive indication of the prospects for a large extension of our trade with Cuba and the Spanish-speaking peoples of Central and South America is the publication in English and Spanish of trade directories, statistics and descriptive articles relating to the United States, Cuba and the southern republics. The same books and pamphlets contain the matter in both languages, and are therefore adapted for circulation over the whole continent.

It is demonstrated that the mercantile navies of the world are far in excess of requirements; therefore, only those ships that are the least expensive to run survive in the struggle for existence. The improvements made in steam engines and propellers during the past few years, and the increase in size of the newer hulls, have enabled the latest built steamers to take the business.

Trade in Mexico is good and the revenues of the Government are said to be well kept up.

Six years in prison is the time to be served by P. J. Classen, the bank wrecker; and George H. Pell, an associate, is at Sing Sing on a seven-years' sentence.

Farmers in Nebraska complain that on account of anti-capitalistic legislation in that State they are compelled to pay enormous premiums on loans and that some are made desperate by not being able to borrow small sums necessary in buying seed.

Experience at the burning of the large nine-story warehouses on Green and Bleeker streets last week shows that "fire proof" buildings with wooden interiors are a delusion.

In consequence of the exclusion of low-grade Mexican ores from the United States, four American smelting companies are now constructing extensive works at San Luis Potosi and Monterey. The Compania Metalurgica Mexicana, as the Kansas

City combination is known, will have within a year ten furnaces in operation and the largest smelting plant on the continent. All these works will require large quantities of coke and coal, and as soon as there are harbor and wharfage facilities a great trade will spring up between Tampico and the Alabama coal fields.

The great Treasury vault at Washington, built not long ago, covers more than $\frac{1}{2}$ acre, and is 12 feet deep. In its interior there is a cage of iron lattice work, the bars of which are made of wrought iron, and which were riveted together with red-hot rivets after the lattice work was put up. It took 100,000 rivets to fasten the iron work of this vault together, and the lattice had to be very strong, as the silver is very heavy. The amount of silver now in the vault weighs over 3000 tons, and you could put these \$90,000,000 on one side of the scales and 35,000 men, weighing each 180 pounds, on the other side, and the silver would outweigh them. It would take 175 freight cars to carry this silver to the seacoast if America should be conquered and this Treasury vault looted. And still this is only a small part of the coin in the Treasury. There is another vault which contains \$59,000,000 more of silver and \$26,000,000 in gold.

The city of Hamburg, Germany, is making efforts to encourage the trade in American cattle. An abattoir of stone and iron is being built which will cost \$800,000. Then there is a separate house for hogs, which is already completed and ready for the trade, which, it is expected, will develop in American hogs so soon as the restrictions upon their importation are removed.

One of the largest manufacturing concerns in Brazil says American machinery is superior to anything made in Europe.

Professor Weldon, M. P., from New Brunswick, says the time has come when England must agree to abandon Canada or agree to discriminate in favor of Canadian products in return for a preference for English manufacturers. In this view England must give her subjects a better market or they will seek one for themselves in the United States.

It is denied that Russia is liable to become a formidable rival of America in the European grain trade. C. Wood Davis, who has "given years to the study of this question," doubts whether Russian cereal production is increasing, and declares that the recent augmented exports from that country are wholly due to the increasing poverty of the Russian cultivator under the pressure of excessive taxation.

Immigration from Europe is just commencing, and steamship agents expect it will exceed that of last year, when the arrivals numbered 491,000. Next to Irish and English, Scandinavians will probably make a large contingent. Italians may be deterred somewhat by the disaster to the Utopia at Gibraltar.

A tank steamer loaded with 500,000 gallons of Cuban molasses has arrived at Philadelphia. The freight paid is reported to have been 2 cents a gallon.

Delaware promises 7,000,000 baskets of peaches this year.

The World's Fair directory at Chicago voted to collect another \$1,000,000 on the \$5,000,000 of capital stock. This is the second installment of \$2 per share, or 20 per cent. The payment will fall due June 1, by which time the construction department hopes to begin letting contracts for the Fair buildings.

Refined sugars are now being manufactured under bond at the rate of 1,200,000

barrels a month, to await April 1, the date of the abolition of the sugar duty, at which time enormous shipments will be made to the principal centers of distribution. St. Louis alone will receive 60,000 barrels, worth at least \$1,000,000, which will nearly all be carried meanwhile by the banks.

A circular, signed by Samuel Gompers, president of the American Federation of Labor, has been addressed to the trade and labor unions of America, and urges the necessity of immediate action in the collection and contribution of funds for the 150,000 coal miners, whose struggle for an eight-hour day is to begin May 1.

The Dominion imported in February goods valued at \$7,616,000 and the exports were \$3,331,000.

The British island of Barbadoes, too, wants reciprocity with the United States. The Governor-General in his annual speech makes it the leading topic.

Single propellers are good enough for the North German Lloyd Steamship Company. The managers have decided definitely not to adopt the twin screw. They are inclined to the belief, not yet demonstrated, that a single propeller, whirled by a mighty engine of the triple-expansion type, will send a vessel through the water quite as swiftly as two propellers turned by twin engines whose combined power does not exceed that of the engine of the single-screw ship. It is claimed that the ship with a single propeller has some important advantages over the twin-screw ship. She can be run much more economically, as she requires only about one-half the men necessary in the dual engine departments of a speeder like the City of Paris. The Havel, according to her agents, consumes less than 200 tons of coal a day, while her rivals with two screws consume a third more. The nominal horse-power of the Havel is 13,000, and her constructors, the Vulcan Shipbuilding Company, have guaranteed that she will make 21 knots an hour.

The prospect of obtaining profitable freights on the lakes is so unpromising that owners of vessels at Cleveland and Detroit have decided not to start their boats before May 15. At Chicago there have been chartered for grain this season only a dozen vessels, to carry less than 1,000,000 bushels, as compared with a fleet that took out 4,500,000 bushels at the opening of navigation a year ago.

Vermonters are still waiting for "sugar weather." Enormous crops are expected in New England, stimulated by the Government bounty.

Important changes are pending in the ocean cattle trade, partly due to the rupture of relations heretofore existing among heavy packers of provisions in the West and cattle growers on the distant ranches. Some of the largest firms, lately doing business in Chicago, are preparing to export the slaughtered animals direct from the seaboard at New York and Philadelphia, rather than ship live animals which are subject to various hardships. In preparation for the change extensive abattoirs are being fitted up at Jersey City and elsewhere, from which the beef will be transferred to swift steamships, equipped with complete refrigerating apparatus. One result predicted is the transfer of the live-stock scepter from the alleged monopolists lately in power to headquarters near New York City. By slaughtering the animals at tidewater it will be possible to market the product in England within a single week. The movement is hastened by the laws providing for the inspection and transportation of cattle passed by Congress, March 3. The act which relates to the transpor-

tation of cattle authorizes an examination of all vessels which are to carry export cattle from the United States to foreign countries and prescribes the accommodations which shall be provided therefor as to space, ventilation, fittings, food and water supply and such other requirements as the Secretary of Agriculture "may decide to be necessary for the safe and proper transportation and humane treatment of such animals." In case of a willful violation of any order or regulation made in pursuance of the act, the vessel on which such violation shall occur may be prohibited from again carrying cattle from any port of the United States during such period, not exceeding 12 months, as the Secretary of Agriculture may direct. Americans have made large purchases of Canadian cattle, which are legally unfettered by British enactments.

The Bath Iron Works.

The Bath Iron Works, located at Bath, Maine, report having done more work in shipbuilding during 1890 than for many years past. Three cradles for the accommodation of ships of 10,000 tons burden have been fitted up in the past year, and many other enlargements and improvements. For the construction of the two gunboats, proposals for which were opened by the United States Government January 22, 1890, the Bath Iron Works bid \$637,000 for the two, which was accepted, and the contract entered into April 12, 1890, for their construction. The contracts require that the vessels shall be completed and ready for delivery to the United States on or before the expiration of two years from the date of the contracts. One of these cruisers is to bear the name *Machias*, in honor of the first naval victory of the revolutionary war won in *Machias Bay* by the loyal Americans in 1775. The gunboats are to be identical, and may be technically termed small twin-screw twin cruisers.

The heavy war vessel known as the *Ammen Ram* is also to be built here. This means that a \$1,000,000 contract has been placed with the Bath Iron Works by the United States Government. It also means an enlargement of the plant, for another cradle must be built, work on the ram being in order before the two cruisers will have been launched. The ram is designed to be a little over 2000 tons. She is armed with a powerful ram, and provided only with rapid-fire pieces. To further insure her fighting efficiency she is to be provided with water compartments, which, on being filled, will sink her deck to within a few feet of the surface of the water. This deck will be heavily armored and effectually prevent the ingress of any hostile shells.

According to the latest corporation returns the financial condition of several concerns in Providence is as follows: American Electric Works, capital stock, \$500,000; real estate, \$54,780; assets, \$502,796.71; liabilities, \$101,999.26. United States Twist Drill Company, capital stock paid in, \$17,900; real estate, none; personal assets, \$1010.44; liabilities, \$75.70. Eagle Machine Company, capital stock paid in, \$6250; real estate, none; personal assets, \$2519.28; liabilities, \$83.68. Nicholson File Company, capital stock paid in, \$400,000; real estate, \$167,960; personal estate, \$401,766.45; liabilities, \$160,986.68. Franklin Machine Company, capital stock, \$120,000; real estate, \$121,000; personal assets, \$142,533.06; liabilities, \$14,458.74. William A. Harris Steam Engine Company, capital stock paid in, \$100,000; real estate, \$107,500; personal assets, \$334,019; liabilities, \$156,631. American Screw Company,

capital stock, \$3,250,000; real estate, \$907,060; personal assets, \$4,279,305.51; liabilities, \$245,614.87.

The American Blast Furnace at Jarrow-on-Tyne.

The furnace which Palmer's Shipbuilding and Iron Company have just blown in at Jarrow-on-Tyne is altogether unique in this country, being in all respects an American furnace, built on the lines of one of the celebrated Edgar Thomson furnaces at Pittsburgh, owned by Carnegie Brothers, which furnace has produced no less than 2500 tons of pig iron in a week, a quantity much more than double that of any British furnace, even where hematite ores are used. The working of this furnace will be watched with interest by the pig iron making world, as it will determine whether the American type of blast furnace is as economical and as good in all ways as the English furnaces for working under British conditions. It is not intended to rival the best American furnaces in regard to big makes, because in the first place a 50 per cent. ore will have to be used, whereas the Americans have a 60 to 63 per cent. ore, and that much less refractory than the hematite ores which are available in this country. Then the pressure of blast is only to be 8 pounds per square inch against 10 pounds in the United States. But the output must be considerably greater than that of an ordinary British furnace, which is driven with a blast pressure of only 5½ pounds per square inch. The furnace is 76 feet 2 inches high and has a 20-foot bosh, with 11 feet depth of well. Four Cowper hot-blast fire-brick stoves are to be furnished, and eight bronze tuyeres, these last, or at least the metal used for them, being peculiarly American, for the tuyeres in this country are invariably made of other metal. A compound condensing engine with 100-inch blowing cylinders supplies the blast, the engine being intended for this furnace alone. In America it is the custom to have one blowing engine to each furnace, and it is acknowledged that this is one of the best features of American practice. Though the furnace has been in blast only a few days, it is found that the system of shifts in vogue in this country will not answer, for while the men are at dinner or changing shift, and charging operations are suspended, the materials fall so far down the furnace that it is difficult to overtake the work and get the furnace full again. It will be necessary, if the furnace is to work economically and produce a uniform quality of iron, that it should be charged regularly. One feature in connection with the furnace which is altogether American is that the furnace up to the bosh is encircled with water tubes, there being no fewer than 64 of these, through which circulate 1500 gallons of water per minute, this arrangement being to keep the brickwork cool and to preserve it. As yet no particulars can be given of the cost of production in this new furnace.—*Engineer.*

The directors of the Thomson Electric Welding Company in a recent circular to stockholders say they have decided to organize the American Projectile Company, with a capital of \$500,000, for the purpose of carrying on the manufacture of shells of various kinds for use in the army and navy. Of the \$500,000 capital stock \$250,000 is to be paid the Thomson Electric Welding Company for the United States patents and exclusive use of the welding process for the manufacture of shells in this country. The remaining \$250,000 is now offered by the American Projectile Company to the stockholders of the Thomson Electric Welding Company at par.

The Iron Age

New York, Thursday, March 26, 1891.

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RICHARD R. WILLIAMS - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Running Plant To Full Capacity.

One of the principles underlying the business policy of many manufacturers has often been the subject of a good deal of discussion. It is that of keeping plant at full employment. The sacrifices which are made to accomplish that end are often astounding to competitors who are not such firm believers in the principle. Yet it is a question which largely depends upon the characteristics of the work in which the manufacturing plant is engaged. Questions of a financial character, like the necessity of keeping going because stoppage means bankruptcy, are not, of course, involved in the discussion of the general principle.

The character of the plant naturally has its influence. The blast furnace furnishes an excellent example. The production of pig iron is a continuous operation. Blowing out and in again involves an expenditure which manufacturers will do much to escape. It is a step which they are loth to take, so that the principle of running to full capacity has particular sway in this branch of the industry. It is true that temporary stoppages have lost much of their terror since founders have learned to bank their furnaces so well that they can resume months afterwards.

A second consideration which, especially in former years, had much weight, is the real or fancied necessity for holding trade, or keeping in the market. In the days when a brand carried far more weight than it does now in the majority of lines this was an important matter. Then the brand was a mark of special skill in manufacturing, or of the possession of particularly good raw materials. Progress in technical management has leveled quality upward, in the leading lines, and in the staples the first point in selling is to make an attractive price. That will recapture any trade for an article of standard quality.

A far more serious point influencing the desirability of producing up to full capacity is that of keeping the technical and commercial organization together, and distributing the cost of its maintenance over as large an output as possible. It constitutes the largest part of the general expenses, and needs consideration, of course, in proportion to its percentage of the total cost. In some industries it is very heavy, rising as high as 50 per cent. of the total outlay, while in others it is not of sufficient significance to seriously affect the business policy.

In a recent conversation with one of the great iron masters of this country, who is at the head of concerns whose apparently

reckless selling is at times both the wonder and the despair of their competitors, another point was brought up which, we believe, has been rarely touched upon. It deals with the proportion in the labor account between the piece and the day hands. We question whether the labor cost is as generally examined critically from this point of view as it should be. An investigation by manufacturers who are running their works on what they believe to be almost exclusively the piece system will show them that the percentage of the total wages paid out which goes to day labor is much heavier than they supposed. While it is true that the amount of money thus paid to day labor is greatly influenced by the volume of material handled by the piece men, it will be found that the relation is by no means uniform. A certain amount of day labor is independent of the amount of business done. When running slowly the percentage is much heavier than it is when capacity is fully taxed. We are informed by the authority alluded to that the difference in labor cost between full and partial employment of plant is far greater than is usually believed, even in industries in which the piece plan is supposed to control the question. A further argument in favor of rapid driving, when the skilled men are paid by the piece, is that their earnings are large and that, therefore, the wages per unit of product can be more readily kept low. The gravest complaint made by workmen is usually not against the rate of wages, but against irregularity of employment.

There is finally another argument in favor of running plant to full capacity, and that is the short life of the plant itself. In our modern industries the life of machinery is not controlled by its capacity to resist wear and tear. It becomes worthless, not because it is old, but because it is antiquated. Its period of usefulness is limited. During that period—brief in some industries, prolonged in others—it must be kept strained to its full capacity if it is to earn its own cost and accumulate a fund for its successor. It is only through frequent renewals that manufacturing plant can be saved from dry rot, of which such melancholy examples exist in our midst. Rich old concerns, with a great surplus but an antiquated plant, are doomed, in their struggle with younger and poorer rivals, who possess modern plant and who pursue modern business methods.

We believe that the weight of argument lies with that policy which keeps plant going to full capacity at all times, and which seizes periods of dullness for remodeling and renewal, when the work can be most cheaply done. In the iron and steel trades that time for preparation for future periods of great activity is now at hand. Those will act wisely who seize the opportunity.

The consolidation of the Lackawanna and the Scranton rail mills has drawn attention again to the rapid decrease in the number of concerns active in that great

branch of industry. Gossip in the trade points to still further reduction in the number of Eastern mills. The manifest destiny of the industry is further concentration. The prediction is made that within the next two years two more of the Eastern rail mills will drop out of line, leaving only two in the East, one at tide-water and one in the coal regions, one occupying the central position at Pittsburgh, one in the West and one in the Rocky Mountains.

Our Chicago Steel-Rail Quotations.

The indefatigable news gatherers of the Associated Press have given to the public through the daily papers almost every phase of the negotiations over a new scale of steel-workers' wages at Joliet. It would appear from dispatches recently sent forth from that point that a sliding scale will be satisfactory to both parties, but that they are at variance over the basis to be established on which to reckon the monthly pay roll. The officers of the Illinois Steel Company desire to secure the adoption of actual selling prices for steel rails as shown by their books, while the workmen's committee favor taking the current quotations of steel rails at Chicago as given in *The Iron Age*. The Associated Press dispatches state that the charge was made by the manufacturers that our quotations are "spurious" and "unreliable," hence their desire to have their own figures taken. We are assured that no such charge was made against our quotations, and the strong expressions above quoted were merely the coloring so often used to heighten the effect of an otherwise tame newspaper report.

We can readily see why a manufacturer should prefer to make the actual prices he receives the basis for the wages to be paid his workmen, claiming that open quotations are not always sufficiently close to actual conditions to make them rigidly reliable. That would, however, not make quotations spurious. They might represent the actual market and yet be unsatisfactory in the regulation of wages. For instance, a steel-rail manufacturer may take large contracts, covering several months' work, at low prices, and those prices are quoted at the time. Asking prices are then advanced, and for several weeks or months the manufacturers may endeavor to make sales without success. Their quotations are honest, they would sell for no less; but no one wants to buy. Meanwhile the mills are turning out the rails taken at low prices. Should the workmen be paid on the basis of the prices obtained for the rails they have thus made, or on the basis of the higher quotations which they see in the paper, or in other ways ascertain that their employers are then asking? If sales were being made continuously the prices received and quotations given might nearly equalize themselves in a year's run, and yet even then there would be room for serious discrepancy and injustice to either the manufacturer or workmen. Huge contracts may be taken at low prices and light sales

made at higher rates, or on a rising market the makers might refuse to enter large orders at low prices and book heavily after an advance had been made. Quotations, however, would represent a period of time and have no relation to volume of sales.

There are also other circumstances to be taken into consideration. Our quotations are based on information received from the manufacturers, and the figures given are those that are secured in response to the usual inquiry, What is the present market price of steel rails, or what is the present condition of the steel-rail market? To such an inquiry it is natural that the manufacturer would respond by giving the price he is asking for his goods at that time, quoting in support thereof such small sales as he may have made at prices above the market for large quantities. For instance, the manufacturer may have sold during the preceding week 10,000 or 20,000 tons of rails at \$31; he may have sold a few odd lots, aggregating perhaps 2500 tons, at \$32 to \$33. On the strength of his sales at \$31 he is asking \$31.50, and to justify his asking that price he quotes the prices established on small sales, and perhaps the fact that the market has reached and taken a round lot of his product at \$31. As a matter of fact, the manufacturer is in the position of a dealer on the Board of Trade or in the stock market, who asks a price that he would desire to get for his grain or his stocks, in contradistinction to the buyer, who offers a lower price at which he would like to purchase the articles in question, but neither of them nor the manufacturer is able to determine the market price. That is fixed by the actual transactions closed. A literal statement of the facts in this particular case would therefore be as follows: The market for rails in large quantities is \$31; for carloads or odd lots \$32 to \$33, but the present quotation or asking price by the manufacturer is \$31.50. If, now, the demand should be good and the market advance because the demand enables the manufacturer to hold for the price he desires, then the market will become \$31.50. On the other hand, if the conditions of trade at the moment be adverse, the demand falling off and the manufacturer endeavoring in the face of a decline to yet maintain his prices, but failing to do so, the market may become \$30.50, or some lower figure, at which actual business is transacted. It must also be borne in mind that on either an advancing or declining market the negotiations may overlap a period of two weeks or even 30 days or longer, and trades made at prices varying considerably from the quotation of the moment may at any time be closed as the outcome of those earlier negotiations.

Prices of commodities are at all times the subject of conflict between buyer and seller, and there is bound to be a difference in the price quoted as the market, unless an average can be struck between the quotations of the buyer and the seller, but it would be a matter of extreme difficulty to arrive at buyers' views on the rail market from week to week, as a new

set is constantly coming forward, while manufacturers are few in number and readily accessible. For this and other reasons, as set forth above, we claim that our quotations are as nearly correct as it is possible to make them, and that they represent the price of rails with sufficient accuracy for all commercial purposes.

The vessel owners on the lakes are making efforts to delay the opening of the season of transportation on our inland waters, by agreement, until the middle of May; but the interests are so numerous and so diverse that practical unanimity on the question is hardly to be looked for. As a matter of fact, agreements seem to possess little significance so far as the ore trade is concerned, when it is considered that the ore docks at the receiving ports are so full that they can take little more ore. It must be noted, too, that a good deal of last year's ore is being carried in stock at the furnaces, many of whom will display no anxiety to pile additional quantities in the vicinity of their plants. A possibly more serious matter is the discontent among the employees of the lake carriers concerning the threatened lowering in their wages and the lessening of this year's term of employment.

OBITUARY.

WILLIAM H. BERRY.

William Henry Berry, the oldest fire brick manufacturer in the country, died recently. He was born in Litchfield, Maine, September 18, 1805. After attending the public schools of Gardiner, Maine, Mr. Berry, at the age of 19, shipped as a sailor and followed the sea for six years. In 1830 he became a dealer in hay in Jersey City, and two years later removed to Woodbridge, N. J., continuing the same business. In 1845, in partnership with Park H. Lane, of New York, he began the manufacture of fire brick. In December, 1846, Jeremiah Dally became a member of the firm, and in March, 1847, Mr. Lane sold his interest to James Valentine and Alexander Brown. In 1849 Mr. Dally sold a part of his interest to Jacques Viena, and finally retired from the firm in January, 1850. Valentine and Brown withdrew in 1885, and Mr. Viena remained in the firm until his death, in June, 1889. Mr. Berry was connected for more than 45 years with the business he established, and was associated with Messrs. Brown and Valentine for 38 years and with Mr. Viena for 40 years.

CHARLES T. G. CHACE.

One of the veterans in the New York iron trade, Charles T. G. Chace, died suddenly of apoplexy on the 14th. He had been connected with the trade for 30 years, having started first with Gardiner & Co. Later in his career he was connected with T. B. Coddington & Co., and subsequently entered into partnership with J. H. Jackson, this connection lasting 18 years. In 1886 he started in business for himself at West and Bank streets.

LANGHORNE WISTER.

Gen. Langhorne Wister, one of the most gallant volunteer soldiers of the war, died at the old family mansion, Belfield, in Germantown, in the 57th year of his age. General Wister was a son of William Wister, for many years the treasurer of the North Pennsylvania Railroad Company. He was born in Germantown on September

20, 1834. On attaining his majority he established his residence at Duncannon, Perry County, where, for a number of years, he was extensively engaged in the manufacture of iron. About 12 years ago General Wister engaged in business in Philadelphia, becoming the senior member of the firm of L. & R. Wister & Co., iron commission merchants. For a couple of years past his health had been poor, and he had not been able to give full attention to business affairs, but it was only two weeks ago that he was taken dangerously ill.

WILLIAM G. PEARSE.

Dr. William G. Pearse, a member of the firm of Armstrong, Steele & Co., owners of the Appamattox Iron Works, one of the largest iron foundries at Petersburg, Va., died a few days ago in that place, at the age of 75 years. Dr. Pearse was a native of Otsego County, N. Y. He came to Virginia in 1853 and settled in Dinwiddie County, where he farmed until about 1868, when he moved to Petersburg.

PERSONAL.

Henry W. Hartman, president of the Hartman Mfg. Company of Beaver Falls, Pa., and also connected with other concerns, sailed for Europe on Saturday, the 21st inst., on a business trip. He expects to return home about the 15th proximo.

It is reported that Jesse L. Law, Sr., who has for some years been with the Garvin Machine Company, is about to leave that concern and accept a more lucrative position with the Niles Tool Works, who are to open a large machinery depot at Liberty and Washington streets, New York. Mr. Law is well known to the machinery trade.

S. T. Wellman of Chester, Pa., spoke to the toast of Iron and Steel at the annual banquet of the Civil Engineers' Club of Cleveland.

W. N. Symington has recently severed his connection with the St. Louis Smelting and Refining Company, the Rio Grande Smelting Company, and the Lacatecas Ore Company, and has resumed practice as consulting mining engineer with headquarters at Brevard, Transylvania County, N. C.

N. T. Burnham has severed his connection with the Laconia Car Company, at Laconia, N. H., after a service of 20 years as master mechanic in the working department. He had been connected with the car building in Laconia from the first, covering a period of 40 years.

A. R. Whitney of New York has returned from a tour to the South.

The leading engineers of the old Scranton Steel Company, Woerum and McKinney, have severed their connection with that concern.

A. T. Shoemaker of the New York office of the Illinois Steel Company has returned from a prolonged trip to the Pacific Coast.

The expedition to the Orinoco iron mines, including Messrs. Norton, Tonkin and Thomas, sent out by B. G. Clarke, Percy Pyne and others, are expected to return at an early date. They made the trip in a specially chartered steamer.

The Milwaukee Bridge and Iron Works, of which Keepers and Riddell were the principal stockholders, made an assignment March 23. The bond of Hamilton Townsend, the assignee, was fixed at \$200,000. The liabilities of the company are reported at about \$200,000. The assets are not given, but it is claimed that they will exceed the liabilities. Slow collections caused the failure.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., March 24, 1891.

The Bureau of Construction and Engineers of the Navy Department are completing the designs of the new protected cruiser. She will be essentially a reproduction of No. 12. The accounts received concerning the work under contract show that everything is progressing favorably, and the present year will witness the "throwing overboard" of a few more accessions to the new navy.

Will Mills be Speaker?

The friends of Mr. Mills of Texas are now satisfied that he will manipulate the gavel of the Fifty-second Congress. The politicians are also confident of the nomination of Mr. Cleveland. A campaign based on a revenue reform bill passed in the Lower House of Congress and endorsed by the National Convention and candidate of 1892 is the programme.

Amended Rules for Boiler Construction.

The report of the regular meeting of the Board of Supervising Inspectors of steam vessels, which has just been officially promulgated by the Secretary of the Treasury, introduces some important amendments to existing rules, adapting them to improved qualities of boiler steel plate and methods of application.

In regard to lap-welded flues it is required, in addition to the old rules, that flues 7 inches and not over 16 inches in diameter shall be made in lengths of not over 3 feet, and fitted one into the other and substantially riveted; or in lieu thereof shall be corrugated to a depth of not less than $\frac{1}{4}$ inch outwardly, and at a distance of not over 3 feet between such corrugations: *Provided*, such corrugations are made without in any manner reducing the thickness of the material in the flue at the points of corrugation to less than the least thickness of the material in the body of the flue, or that such flues are made in sections of not over 3 feet in length, and flanged to a width of not less than 2 inches, and riveted substantially together with a wrought-iron ring, having a thickness of material of not less than the thickness of material in the flues, and a width of not less than 2 inches, riveted between such flanges. The thickness of the lap-welded flues shall not be less than the product of the constant 2.20 multiplied by the diameter of the flues in inches, which will express the thickness in hundredths of an inch.

For cylindrical boiler flues over 16 and less than 40 inches in diameter the following formulas shall be used in determining the pressure allowable: Cylindrical boiler flues over 16 and not over 40 inches in diameter shall be made in lengths of not over 3 feet, fitted one into the other and substantially riveted, or flanged to a depth of not less than 2 inches and riveted together with a good and substantial wrought-iron ring between each joint, and no such ring shall have a thickness of less than $\frac{1}{4}$ inch, nor a width of less than 2 inches, and the maximum steam pressure per square inch allowable shall be determined by the formulas given.

The amended rules are very complete and give full directions as to Government requirements for coil and pipe boilers, constructed in all parts of wrought iron and steel plates.

Duty on Strips.

In a protest against duties charged on certain flat wire the United States General Appraisers decide that the articles in question are iron strips, varying from $\frac{1}{16}$ inch to $\frac{1}{4}$ inch in width, and from 25 to 27 wire

gauge in thickness. Duty was assessed at 45 per cent., under a proviso in Act of October 1, 1890, that all wire valued at over 4 cents a pound shall pay a duty of not less than 45 per cent. ad valorem. Appellants claim that the merchandise is flat-rolled iron, and should have been rated at 1 cent a pound. It appears from expert evidence and an examination of the samples submitted that the flat strips in question are cold rolled from drawn wire and subsequently drawn through dies or grooved rolls to give a uniform width and thickness and smooth edges. The merchandise is consequently dutiable under the provisions for wire.

Duty on Wire Rope.

The question of duty on wire and manufactures having been long a matter of puzzling controversy between the Department and the importers, the manufacturers of wire and wire rods also taking a lively part in the argumentative affray, as their interests have suggested, the United States General Appraisers, in a protest against an assessment, have gone into the subject with reference to the assessment of duty with considerable elaboration. The importation was partly of iron-wire rope and partly of steel-wire rope. Under the schedule of wire, the act of 1890 provides for assessment of duty on wire rods. It establishes the duty on wire according to its size by the wire gauge, and after two provisos, which need not be considered, continues as follows:

And provided further, That no article made from iron or steel wire, or of which iron or steel wire is a component part of chief value, shall pay a less rate of duty than the iron or steel wire from which it is made either wholly or in part.

After another proviso not pertinent hereto, the paragraph proceeds by another subdivision to establish the following specific duties:

On iron or steel wire coated with zinc or tin or any other metal (except, &c.), $\frac{1}{2}$ cent. per pound in addition to the rate imposed on the wire of which it is made; on iron-wire rope and wire strand, 1 cent per pound in addition to the rate imposed on the wire of which it is made; on steel-wire rope and wire strand, 2 cents per pound in addition to the rate imposed on the wire of which they or either of them are made; *Provided further*, That all iron or steel wire valued at more than 4 cents per pound shall pay a duty of not less than 45 per centum ad valorem, except that card wire for the manufacture of card clothing shall pay a duty of 35 per centum ad valorem.

The wire used in the rope in question was "smaller than No. 16 and not smaller than No. 26 wire gauge," and was subjected to the specific duty of 2 $\frac{1}{2}$ cents per pound. The portion of it which had been manufactured into iron-wire rope was subject to an additional specific duty of 1 cent per pound as such rope, and the portion of it which had been manufactured into steel-wire rope was subjected to an additional specific duty of 2 cents per pound as such rope.

The appraisers add: "We further find that the wire in the rope is valued at more than 4 cents per pound. The question before us is whether the wire in the rope shall first be assessed for duty at 45 per cent. ad valorem, and shall then pay the additional specific duty of 1 cent per pound for iron-wire rope, and 2 cents per pound for steel-wire rope; or whether the requirements of the law are fulfilled when both the specific duties are paid, provided the wire by such specific duties pays a duty of not less than 45 per cent. ad valorem. The old law established specific duties on wire according to the wire gauge somewhat differing from the present act, and imposed the additional 1 cent per pound for iron rope and 2 cents per pound for steel rope, as in the present act; and the 45 per cent. proviso is new matter.

"We are disposed to hold that the proviso does not establish the rate of duty, but defines a limit below which the wire

shall not be assessed, leaving the specific duties on the wire and the rope to apply, provided in their aggregate they do not fall below 45 per cent. ad valorem. It is contended by the importer, and not denied by the appraising officers, that the imposition of the ad valorem rate plus the additional rate for the iron and steel rope would amount to a prohibitory duty, and we should hesitate to give a construction leading to such a result, unless the language of the statute clearly requires it. We think on the contrary, that Congress intended to re-enact with modifications specific duties for this class of merchandise, provided the same do not aggregate less than a minimum of 45 per cent. ad valorem. The importers offer evidence to show that the specific duties applicable to this merchandise amount to more than 45 per cent. ad valorem, and the assistant appraiser, responding to our call, submits a statement confirming this claim of the importers. We therefore decide that the entry should be reliquidated upon the basis of payment for duty of 2 $\frac{1}{2}$ cents per pound for the wire, with an addition of 1 cent per pound for the iron-wire rope and 2 cents per pound for the steel-wire rope."

Blowing in the Burden Furnace.

The No. 1 furnace of the Burden Iron Company of Troy, N. Y., after being thoroughly overhauled and having three Gordon fire-brick hot blast stoves, new bustle pipe, tuyere stocks, hearth and bosh jackets, &c., fitted to the new lining of their furnace, was lighted at 12 o'clock on Wednesday, March 4, after a good drying out of both the stoves and furnaces. The blast was first put on and the furnace lighted with the blast on, the bell and all gas valves being securely closed, and the damp gas from the furnace permitted to escape from the most remote explosion door in the gas conduits. This condition was continued until the gas was considered sufficiently dry to burn without risk, when it was successfully introduced into two of the stoves, while blast passed through one of them.

The first burden, applied upon a blank of 50,000 pounds of fuel, was $\frac{1}{4}$ pounds of ore to 1 pound of half coke and half anthracite. The first iron made was a fair grade of foundry, and with a rapidly increasing burden and consistently increased blast, the furnace was continued on practically a foundry grade until what was considered nearly the heaviest burden was fully at work on the following Wednesday, just a week from the day of lighting the fire. This burden was 7000 pounds of ore to 3600 pounds of fuel, 35 per cent. of which was coke and 65 per cent. anthracite coal. The ore charge was of a mixture containing 52 per cent. of metallic iron. It can thus be figured that, with this burden on, the furnace was making a ton of iron with a ton of fuel, or rather a pound of iron with a pound of fuel, as it is easy to confound the long and short tons. The highest temperature of blast used was 1350°, and it is not thought that the furnace had reached her ultimate carrying capacity.

Two of the improved Gordon-Whitwell-Cowper stoves, each 18 feet in diameter and 60 feet high, were used, the third being permanently shut up, as it was found that a steadier heat was kept with the two stoves than with the three, the fall in temperature while the stoves were on being insignificant. With these two stoves the 10,200 cubic feet of blast employed was readily maintained at any temperature desired. The tendency was for the blast to increase in temperature, evidencing that a much greater quantity of blast or the same amount of blast at a much higher temperature could have been heated with two of these stoves, one being

on gas and one being on blast. The product for Wednesday, the seventh day in blast, was 84½ tons, or at the rate of 75 cubic feet to the ton in 24 hours. The furnace is 14½ feet in diameter and 60 feet high. It has an 8-foot hearth and 6400 cubic feet capacity.

Pressed Steel in Car Construction.*

From the best information that I can gather I estimate that about 12,000 tons of pressed steel has gone into car construction during the past two and a half years, consisting of spring plates, journal-box lids, center plates, stake pockets, side bearings, drawbar attachments, dead blocks, corner bands, &c., and from all that I can learn these various articles are doing good service.

The greatest drawback to the introduction of the various articles is the multitudinous number of sizes of the same article, the impossibility of getting the gentlemen constituting the mechanical departments to see eye to eye in the matter of standards. As an illustration of this, the Schoen Mfg. Company have between 70 and 80 sets of dies for center plates, and about 100 sets of dies for stake pockets alone. There ought not to be any necessity for more than one-half dozen sizes of either of these articles. This same difficulty follows in nearly everything about a car, and it is readily seen that the various articles cannot be produced as cheaply as they could if this large expense for dies was eliminated from the cost. Besides, the cost for repairs is largely increased because of the delays occasioned in getting material for repairs for foreign cars having different patterns.

The advantage of using a homogeneous metal in car construction, such as we have in low carbon steel, is certainly beyond comparison with cast iron. We have a metal that will withstand shocks without injury far beyond that of cast iron, and in consequence of this the expense for repairs is largely decreased. The weight of the various articles in pressed steel, which are substituted for castings, will average about one-third the weight of the cast iron displaced, and, assuming that there have been 12,000 tons of pressed steel articles used up to the present time, as stated above, it has displaced 36,000 tons of cast iron. It costs just as much to haul that 24,000 tons of surplus weight as it does to haul that amount of paying freight. I have made up a statement which shows the saving occasioned by this reduction in dead weight.

The figures on which the calculation is based are taken from the last report of the Pennsylvania Railroad Company. I have taken the car mileage at 10,000 miles per annum. Assuming for the purpose of calculation that the weight of the car is equal to the average load hauled, the cost of hauling the car would be one half the total cost for hauling paying freight. The Pennsylvania Railroad Company's last report states this to be 0.473 of a cent per mile; one half of this, 0.236 of a cent, would be the cost per ton per mile for moving what we might term the dead weight, 24,000 tons, which represents the saving by using pressed steel, at 0.236 of a cent per mile, of \$56.64. Taking the car mileage at 10,000 miles per annum, this, at \$56.54 per mile, equals \$566,400 saved by substituting pressed steel for cast iron. If the life of the car be taken at 12 years, it would amount to the total of \$6,796,800.

Indeed, I predict in the near future that a steel car throughout will be the popular car. The cost of steel is growing less

from year to year, brought about by improved methods of manufacture, until even now a steel car can be built very closely approximating the cost of a first-class wooden car as at present constructed. The Harvey Steel Car Company of Chicago, I understand, are at present engaged in building 25 of their steel cars. The Fox Pressed Steel Company are engaged in developing their pressed steel car truck, and have the utmost faith in its success. The Schoen Mfg. Company are at present engaged in making preparations to build a number of steel cars, and propose to put them in service and let them run and develop any possible weak points or mistakes in design, with a view of preparing to build these cars in a regular way.

It is confidently believed that a steel gondola car of 30 tons capacity can be built thoroughly well, and the weight will be less than 19,000 pounds. This is a saving in dead weight of several thousand pounds over the ordinary wooden car; and as a vehicle for the transportation of freight, its value is as much greater than a wooden car as the cost of transporting the dead weight in the wooden car would amount to, less any differences that there might be in expense of keeping the car in repair; and it is fair to presume that the cost for maintenance would be less than it would be in a wooden car.

The art of shaping steel in dies is a very interesting study. Many things can be made from pressed steel of considerable thickness that the ordinary worker of metal would hardly credit. This is due to the developments in the art partly and partly to the uniformity in quality and cheapness of the steel as produced to-day. A few years ago this industry could not have been developed, because of the high cost of material. To-day, however, steel shapes can be substituted for castings without increasing the cost of construction, except in cases where extremely light castings are used.

Lake Superior and Foreign Ores.—

A little pocket book which rises far above the ordinary trade publication has been sent out by Edmund D. Smith of Philadelphia. Accompanied with a map showing the Lake Superior ore-producing ranges, the shipping and the receiving ports, it gives analyses and a description of the physical condition of the domestic and foreign ores which the firm represents. It includes the six grades of the Minnesota Iron Company, the Minnesota, Braddock, Nipigon, Vermillion, Soudan and Red Lake; the Chandler and Long Lake grades of the Chandler Iron Company, the Pioneer, Fitch and Hemlock ores, all of them from the Vermillion range; the Odanah from the Gogebic range; the different grades of the Cleveland Iron Company; the Barnum and Cliff Shaft ores of the Iron Cliff Company; the Salisbury, the Michigamme and Sharon of the Michigamme Company, and the Humboldt Baron and Humboldt Franklin of the Humboldt Iron Company. Edmund D. Smith & Co. handle also the Sigua, a Cuban ore, and the Seriphos ore from the Grecian Archipelago.

A meeting of prominent citizens of Jeanette, Pa., was recently held and a Board of Trade was organized. A. C. Martell was elected president and F. B. Cope secretary. H. Sellers McKee and a number of other prominent citizens were chosen directors. This board was organized to induce manufacturers and other business enterprises to locate there, and will offer them free gas and free ground to do so.

A. J. Forbes Leith of the Illinois Steel Company sails for Europe this week.

MANUFACTURING.

Iron and Steel.

Notice of a reduction of 10 per cent. in wages has been posted at the Lehigh Iron Works, Aimeyville, Pa.

The Cincinnati Iron and Steel Company, Riverside, Ohio, have made an assignment to Sam W. Ramp, with liabilities of \$70,000 and assets of \$50,000.

Both of the Oxmoor furnaces of the De Bardeleben Coal and Iron Company, at Oxmoor, Ala., are now in blast.

The Star and Crescent furnace of the Cherokee Mfg. Company, at New Birmingham, Texas, will go into operation by July 1.

Arrangements have about been completed for the erection of a rolling mill near Pittsburgh. The site selected is at Hays Station, on the lines of the Pittsburgh, Virginia and Charleston Railroad and the Pittsburgh, McKeesport and Youghiogheny Railroad. By way of the first named, it is about 6 miles from Pittsburgh, while on the other line it is 5.6 miles from that city. The parties interested in the new venture are principally iron workers who have formed a corporation, with a capital stock of \$150,000, and have purchased 80 acres of ground on which to erect the plant. The site has a frontage of 7 acres on the Monongahela River, and is underlaid with coal, which was purchased with the ground. As at first built, the plant will contain 20 puddling furnaces, and will make muck iron only. If the venture proves successful, additions will be made to the plant and a general line of merchant iron will be made. George Carter, for some years manager of the Sligo Iron Mills, of Phillips, Nimick & Co., at Pittsburgh, will be general manager, and Robert McKibben, puddle boss of the same concern, will have charge of the puddling department. Work on the plant will be commenced as soon as possible, and it will probably be in operation in the fall.

The Central Trust Company of New York several years ago loaned the Cameron Iron and Coal Company \$1,000,000, and held a mortgage on the property which consisted of several thousand acres of coal lands, two large coal works and one blast furnace at Emporium, Cameron County, Pa. The company became insolvent, and the Central Trust Company were the first to go to the United States courts and ask for the appointment of a receiver and also for the foreclosure of the mortgage which it held against the company. The creditors and stockholders who saw in this move no hope of receiving anything out of the wreck, fought every move on the part of the complainant. A number of bills were filed and each bill brought a cross bill, until at the present time volumes of testimony and numerous legal papers have been filed in the Circuit Court. The final hearing in the United States Circuit Court, at Pittsburgh, last week, was on a bill on proofs for the foreclosure of the mortgage. It is said that the company and the smaller creditors will make no further objection to the foreclosure. The court reserved its decision, but in a few days an order is expected authorizing the foreclosure and sale of the company's works. It is said that the assets will far more than satisfy the mortgage of the Central Trust Company, but many of the stockholders and creditors will lose considerable money.—*Bulletin*.

In 1883 Reis Brothers, iron manufacturers, at New Castle, Pa., failed and owed their employees about \$9000, and were only able to offer in settlement a small percentage of this sum, which was refused. Some years later they paid 50 per cent. of the claim. On Thursday, the 19th inst., the old employees were notified that the balance due them would be paid on application. The works have since changed hands, and many of the men are dead or have moved away. About \$4300 was paid out last week.

It has been found necessary to make a few changes in the vertical mill of the 32-inch slabbing train at the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa. In consequence, this department was closed down for one week. As the product of the open-hearth furnaces practically all goes through the slabbing mill, these were also closed down while the changes noted above were being made.

On March 2 executions aggregating \$44,345.42 were issued against Jacob K. Spang, proprietor of the Maiden Creek charcoal furnace, located near Lenhartsville, Berks County, Pa. They were issued at the instance of Robert Bland, as trustee, for \$31,020.42, and for Mr. Bland, for the trust estate of Martha Stern, nee Lerch, now in Erie, Pa., under the

*Read before New York Railroad Club, March 19, 1891, by Charles T. Schoen, president of Schoen Mfg. Company.

will of George Lerch, deceased, for \$13,325. One-half interest in the furnace and property connected with it at Lenhartsville was purchased by Mr. Spang about seven years ago at the rate of \$35,000 for the whole. Connected with the furnace are between 200 and 300 acres of land, a grist mill and about 15 dwelling houses. The furnace is still in operation.

The Standard Iron Company of Bridgeport, Ohio, will, in a short time, commence the erection of an additional building.

The Reeves Iron Company of Canal Dover, Ohio, are making some very extensive additions to their plant. They have under construction a building 258 feet long and 65 feet wide at one end, and 180 feet at the other, for the manufacture of sheet iron and galvanized iron. The building and plant, when completed, will cost not less than \$100,000. The firm have recently added six puddling furnaces, and will put in two more as soon as possible. They have also recently added a new muck train, built by the Lloyd-Booth Company of Youngstown, Ohio. Their plant has not been closed down for any cause whatever since July of last year, and have sufficient orders on hand to keep them busy for some time to come.

The works of the Wrought Iron Bridge Company at Canton, Ohio, are closed down at present for the purpose of taking stock. As soon as this is completed operations will again be resumed. This firm have just closed a contract for building an all-steel viaduct at St. Louis, Mo., the dimensions of which are as follows: Three spans of 139 feet each, four spans of 59 feet each, nine spans of 53 feet each and one span each of 304, 159 and 65 feet. The total length is 1273 feet, with a width of 51 feet 8 inches. The material used in its construction will weigh about 1300 tons.

The Springfield Iron Company, Springfield, Ill., report a large and increasing trade in bar iron for manufacturing purposes. Their production of angle bars in February was 4000 tons. They have recently increased their facilities for making angle bars by discarding their old machinery and putting in a full complement of new and powerful apparatus in its place. Among the latter is a new machine for punching six holes at one stroke in the angle bar, by which a straight bar is assured. They have shipped as much as 4500 tons in a month and now claim to have the largest capacity in the country for angle bars. The St. Louis office is in the Laclede Building, and is in charge of Albert Waycott.

The Fort Payne Furnace Company of Fort Payne, Ala., have decided to issue \$50,000 in bonds in order to make a number of contemplated improvements in its iron furnace.

The iron furnace of the Rome Iron Company, near Rome, Ga., is approaching completion. The same company contemplate the erection of two additional furnaces at a future date.

It is stated at Glasgow, Va., that officials of the Rock Bridge Company are investigating the Adams direct steel process, with a view to the location of a plant at that place.

T. C. Jones of Richmond, Va., and others are interested in the establishment of an iron furnace at Irongate, Va.

Negotiations are reported to be pending between the Marble City Land and Furnace Company, at Syllecauga, Ala., and other parties, with a view of establishing in that place an iron rolling mill and a cotton tie factory.

No. 2 furnace of the E. & G. Brooke Iron Company at Birdsboro, Pa., went out of blast last week for relining and repairs. As soon as these are completed the furnace will resume operations.

The plant of the American Tube and Iron Company, at Youngstown, Ohio, is being operated day and night, giving employment to over 400 men. For some time past they have been at work on a large order for gas pipe for a natural gas company at Toledo, Ohio.

At a meeting of the Board of Trade of Pottstown, Pa., held in that city recently, J. Mangle Fisher, for the committee appointed to interview the Ellis & Lessig Steel and Iron Company, reported that the firm would remain in Pottstown for a consideration of \$200,000 from citizens, which would insure to them an interest in the business. The committee understands that the members of the firm are not united in a desire to move; that they would prefer to remain and unite their interest in the business with citizens who would be willing to subscribe a sufficient amount of money to operate the works by means of a stock company.

At a meeting of the stockholders of the Ohio Iron and Steel Company, held at their office in Lowellville, Ohio, last week, the following Board of Directors was elected to serve for one year: Thomas H. Wells, Myron C. Wick, T. F. Woodman, F. H. Wick, Samuel Mather,

John C. Wick and Robert Bentley. The only change made was the selection of Samuel Mather of Cleveland, Ohio, to succeed Henry Wick, whose stock was recently purchased by Robert Bentley. The Board of Directors subsequently organized by electing Thomas H. Wells president, John C. Wick vice-president, F. H. Wick treasurer and Robert Bentley secretary and general manager.

The skelp mill department of the plant of the Riverside Iron Works at Wheeling, W. Va., has been closed down for repairs, which will include the increasing of the capacity by the substitution of new and larger table rolls. Their nail factory, which has been idle for some time, resumed operations last week.

Charles E. Pope & Co., Pittsburgh, Pa., are prepared to furnish sheet steel for special purposes to those who may find that the regular supply of material does not meet their wants as to quality, lengths, widths and gauges desired.

The furnace of the Napier Iron Company of Napier, Tenn., is expected to blow in October of the current year.

Work on the new factory of the South Wareham, Mass., Nail Works is being pushed rapidly forward. New machines are to be put in.

E. Buxton & Son have lately purchased a tract of land in Worcester, Mass., containing 65,000 square feet, to which they will move their scrap iron business in the spring from its present location at Holyoke.

Machinery.

The Webster, Camp & Lane Machine Company of Akron, Ohio, have contracted to build for the Hamilton Ore Company of Sharon, Pa., a hoisting plant of unusual size for their mines at Iron Mountain, Mich. The plant will consist of two pairs of Corliss hoisting engines, each pair of 800 horse-power. The cylinders are each of 32-inch bore, with 72-inch stroke. The hoist will be something like 2500 feet, and 10 tons of ore will be lifted at a load, which will be the largest load of ore hoisted in this country, the average being about 2 tons. The total weight of the plant will be 300 tons, and it will be over a year before the last of the machinery will be shipped. The contract amounts to \$40,000.

The Tompkins Machinery and Implement Company of Dallas, Texas, are reported to have made an assignment. Liabilities \$115,000; nominal assets, \$500,000.

Frank K. Tyler, early in February sold the Progress Engine and Machine Works of Summerfield, Md., of which he was sole proprietor, to the Progress Engine and Machine Works of Fredericksburg, Va., a company having the following officers: Frank K. Tyler, president; Walter D. Tyler, secretary, and Charles Tyler, treasurer. Subsequently the latter company bought the Hope Foundry, formerly conducted by Benjamin Bowering at Fredericksburg, Va., to which place the Summerfield plant has now been moved.

The Yale & Towne Mfg. Company, at Stamford, Conn., have recently made the following shipments: One 5-ton locomotive crane to the National Tube Works Company, McKeesport, Pa.; one 5-ton jib foundry crane to the Corning Iron Works, Corning, N. Y.; one 5 ton hand traveler to Guild & Garrison, Brooklyn, N. Y., and one 2-ton locomotive crane to the Illinois Central Railroad.

John W. Brown of Harrisburg, Pa., who has so long managed the iron foundry and machine works established by the Bay Brothers at State and Canal streets, has increased the facilities of the concern and taken as a partner in the business his nephew, Mercer Brown Tate.

Holyoke's latest industry, the Horner Machine Company, have begun business. The company have been incorporated with a capital of \$25,000 and these officers: President, M. H. Whitcomb; secretary and treasurer, P. H. Smith; directors, F. H. Gilpatrick, Peter Westphal, Richard Horner. A general jobbing business will be carried on, and a special feature of the business will be the making of emery grinding machinery.

For several months past the daily press has constantly referred to what it called the financial troubles of the Westinghouse interests. While it is true that there are several industrial corporations which in one form or another bear the name of "Westinghouse," it is equally true that the "financial troubles" among these companies have been confined to what is known as the Westinghouse Electric and Mfg. Company, or, in other words, to that company whose business consists in making electrical apparatus. The Westinghouse Machine Company, whose business consists in making their well-known "Westinghouse engines," have had no "financial trouble." In-

stead of curtailing its operations, this institution is still further increasing its capacity as rapidly and as much as it can. New tool and store rooms are just approaching completion, and it is hoped by the management, during the coming spring or summer, to be able to add complete new erecting and testing shops, fitted with large power cranes and all modern improvements, and which shops will have a producing capacity twice as great as the present ones.

The Skinner Chuck Company, New Britain, Conn., are now occupying their new factory, where they enjoy increased facilities. They are bringing out some new chucks and making improvements on their standard goods.

J. H. Sternbergh & Son of Reading, Pa., are laying the foundations for a new machine shop to have a floor space of about 10,000 square feet. They also intend to erect an iron structure 360 x 160 feet, to be used as the forging and finishing departments.

The National Machine Company have been organized at Hartford, Conn., with a paid-up capital of \$30,000.

The Martin's Ferry Boiler Company of Martin's Ferry, Ohio, have contracted for the removal of their boiler works to Cameron, W. Va.

Plans for the building of the Shendun Machine and Repair Shops have been completed at Shendun, Va., and the work of erection has commenced. The building will be two stories in height, with a steel roof and corrugated-iron siding. The works will be completed and in operation before the 1st of May.

A contract is reported made between the Commonsense Engine Company of Springfield, Ohio, and the Martinsburg Mfg. and Mining and Improvement Company of Martinsburg, Va., looking to the building at Martinsburg of branch boiler and engine works.

The El Paso Foundry and Machine Company have been organized at El Paso, Texas, with a capital stock of \$50,000.

The Richmond Locomotive and Machine Works of Richmond, Va., are making further additions to their plant.

Work is reported commenced on the boiler and engine works of the American Iron Works at Berryville, Va. This plant consists of two buildings 86 x 80 feet, and two others 200 x 80 feet.

The Norfolk Supply Company, with a capital stock of \$50,000, have been incorporated by B. D. Groner, president; T. E. Elliott, vice-president; and F. J. Bain, secretary, for the purpose of establishing machine shops for the manufacture of railroad, steamboat and other supplies.

Machine shops and roundhouse are to be established by the Ohio River Railroad Company at the new town of Central City, W. Va.

It is stated that Ohio parties are negotiating with the Franklin County Improvement Company of Winchester, Va., looking to the establishing in that place of machine shops and iron foundry.

Machine shops are to be established at Lexington, Ky., by the Chesapeake and Ohio Railroad Company.

The West Virginia Central and Pittsburgh Railway Company will enlarge their machine works at Elkins, W. Va., with a view of adding the manufacture of cars.

The Elliston Machine Works Company have established a foundry and machine shops at Elliston, Va.

The Westinghouse Air Brake Company of Pittsburgh, whose plant is located at Wilmerding, Pa., have declared a dividend of 4 per cent. on their capital stock, payable on April 10, 1891, to stockholders of record of that date.

The Hyer-Sheenan Electric Motor Company have been incorporated at Stafford Springs, Conn., to manufacture motors, governors and other specialties.

The Lowell Machine Shop, Lowell, Mass., has been making various improvements in its plant which will greatly facilitate the work in several departments.

Already steps have been taken toward the erection of a large factory in West Lynn, Mass., for the projectile department of the Thomson-Houston Electric Works. The projectile department is connected with the United States Works, and when it is in full operation will require between 1200 and 1300 men.

The property of the Lathe & Morse Machine Tool Company of Worcester has been sold by the surviving partner of the old firm, E. A. Thwing, to Gen. W. F. Draper of Hopedale.

The transfer of property has been made, and General Draper is now in possession, but a supplementary bill in equity is to be filed, asking that the sale set aside.

Anthony Humphrey and J. H. Hanscom of the Hyde Iron Works foundry department have purchased the old Barytes Mill property at Bath, Maine, and will convert it into another iron foundry.

The new foundry of Doherty Bros., at Lowell, Mass., will be furnished with machinery to run by electricity, at a cost of \$35,000.

E. H. Brammel of Camden, Maine, is to build a two-story building, 46 x 52 feet, for a brass and iron foundry and machine and wood-working shop.

The Hartford Engine and Machine Works is the style of a new concern at 223 State street, Hartford, Conn. Small steam engines, pumps and other machinery of the kind will be built, including special machines and tools.

The foundry of Sewall & Simpson of Kenduskeag, Maine, started operations last week, when the first drawing was made. Plows, stoves and other ironware are to be manufactured.

The Waltham Emery Wheel Company are erecting a new factory at Waltham, Mass., which they will soon occupy. The main building is 240 x 50 feet, part of which is one story high and the rest two stories, with boiler and engine rooms 18 x 32 feet each, and office 30 x 40 feet and two stories. Wheels from $\frac{1}{4}$ inch diameter to 42 inches in diameter are made at this establishment. The new works will be supplied with new machinery.

Hardware.

The King Axe Company of Cleveland, Ohio, have increased their capital stock to \$100,000 and are contemplating the enlargement of their plant.

The Ohio Valley Woven Wire Fence Association have been incorporated at Wheeling, W. Va., by J. P. Smith, C. W. Curtis, A. W. Darling and others, for the purpose of establishing a wire-fence factory. This company have a capital stock of \$50,000.

The Kelly Axe Mfg. Company of Louisville, Ky., contemplate the improvement and enlargement of their axe works.

Parties from Springfield, Ohio, are reported to be prospecting at Radford, Va., looking to the establishing in that place of a plant for the manufacture of architectural iron work and lawn mowers.

Tucker & Dorsey Mfg. Company, Indianapolis, Ind., have just completed a new factory building and warehouse; the former 80 x 25, two stories, and the latter 40 x 80, both of brick. These are erected for the production and storage of the Tucker Patent Furniture Caster. The factory building is thoroughly equipped with the latest improved machinery. The company are now engaged in getting out an entire new set of patterns, castings from which will be made in a few weeks.

The Holt Mfg. Company have been organized at Hartford, Conn., to manufacture hardware.

The Cedarine Mfg. Company, Clinton, N. Y., have leased the old skating rink on College street, and the manufactory has been removed from its former place on Dwight avenue. New machinery has been put in. The enterprise has grown to be one of Clinton's leading manufacturing industries.

A new foundry will soon be started at Hudson, N. Y. It will be conducted under the firm name of Malone & Thompson. They are both young mechanics. The new firm have leased the property on State street formerly used by the Hudson Bridge Works. The new concern contemplates making all kinds of machine castings, as well as house castings, columns and binders and mill castings of all descriptions. They will make engine work, steam and water cylinders a specialty.

Parlin & Olendorff Company of Canton, Ill., contemplate putting in an entirely new steam plant during July, and desire to enter into correspondence with manufacturers of boilers, engines and heaters.

The Waltham Watch Tool Company, Waltham, Mass., report an excellent trade and are well supplied with orders.

Utica, N. Y., will probably have some new manufacturing. Representatives of the Iron Roofing and Corrugating Company of Jersey City have been shown about Utica by E. D. Matthews of the Merchants' and Manufacturers' Exchange Committee. Delaware, Lackawanna and Western officials promise to construct a switch on Erie street to give manufacturing frontage if the right of way is ob-

tained. West Utica people are in favor of the project. Three other manufactories are looking for sites in Utica.

Theo. J. Ely Mfg. Company have removed from Conneautville to Girard, Pa., where they are now located in a much larger factory with plenty of power. They are situated on four railroads, and with increased facilities will be in a position to largely extend their business.

The Waltham Emery Wheel Company, Waltham, Mass., have just completed a large shop, which they will occupy about April 1.

The Acme Mfg. Company, Springfield, Ohio, have been incorporated. The capital stock is mentioned as \$25,000. The incorporators are D. F. Graham, Paul A. Staly, F. A. Rice, T. M. Jones, R. D. Baldwin, C. B. Fisher and H. J. Bosart. The company will manufacture novelties in hardware.

The Tri-State Can Company, Baltimore, Md., and Keokuk, Iowa, advise us that contracts have been let for the rebuilding of their factory, which was destroyed by fire in February. The work will be undertaken as soon as the weather will permit. New machinery is being purchased and will be ready by the time the new building is prepared to receive it. The company expect to resume manufacturing about June 1.

The J. L. Thompson Mfg. Company, Waltham, Mass., manufacturers of metal rivets, are so well supplied with orders that they have been compelled to run at night.

The American Crayon Company, Waltham, Mass., are doing a large business and are well filled with orders.

Miscellaneous.

The Keystone Mfg. and Supply Company of Pittsburgh have been chartered, with a capital stock of \$15,000. The directors are Thomas Adams and Grant McCargo of Pittsburgh and Charles E. Dickson of Swissvale.

G. Edward Osborn & Co. succeed Geo. E. Ives & Co., New Haven, Conn., as manufacturers of the Elm City Counter, which is an accurate register adapted for use on any machine. Osborn & Co. will remove to larger quarters soon and add extensively to their line of printers' materials.

The foundation walls for the new copper wire mill now being erected at Braddock, Pa., are about completed. Most of the structural iron work for the buildings is already on the ground and the work of erection will soon be commenced. This company propose to make a specialty of rolling copper wire, which has never been done before in Pittsburgh. Lieut. L. W. Fitch, for some years connected with the Braddock Wire Company, is one of the chief promoters of the new company.

The Fredonia Mfg. Company is the title of a new concern recently established at Youngstown, Ohio, for the manufacture of buggies, surreys, road wagons and the Simmons couplings. The new concern recently purchased the business, patents and stock of the Fredonia Carriage and Gear Company, at Fredonia, Pa., and removed the same to the above place. They have remodeled the Ellis planing mill and added a three-story building for a finishing department, with a view of extending their business as much as possible. The new plant commenced operations on Monday, the 16th inst., giving employment to 40 men. The following are the officers of the company: Myron Wood, president; Lorenzo Lane, vice-president; B. F. Wirt, secretary, and F. L. Thomas, treasurer and general manager.

The report is current in Middletown, Va., to the effect that the Philadelphia Tube Works Company have signed a contract with the Middletown Land and Improvement Company for the erection of tube works in Middletown.

Among recently authorized corporations in Illinois are the following: Robinson Mfg. Company, at Freeport; to manufacture and sell vehicles; capital stock, \$50,000; incorporators, J. L. Robinson, William Koenig and Peter Bixley. Lytle & Eckles' Hardware Company, at Decatur; to do a general hardware business; capital stock, \$30,000; incorporators, R. P. Lytle, John P. Eckles and A. S. Robinson. Danville Foundry and Machine Company, Danville; to do a general foundry and machine manufacturing business; capital stock, \$75,000; incorporators, William Stewart, Mary Stewart and L. A. Chesley. J. G. Starr & Son Harness Company, Decatur; to manufacture harness and saddlery goods; capital stock, \$50,000; incorporators, William H. Starr, Joseph S. Starr and Henry C. Starr. The Chicago Folding Typewriter Desk Company, Chicago; for the manufacture and sale of typewriter furniture of all kinds; capital stock, \$5,000; incorporators, Edward J. Arries, Stewart B. Vowell and Samuel H. Vowell. Waukegan Engine and Machine Works, Wau-

kegan; for manufacturing and repairing engines and machinery; capital stock, \$3,000; incorporators, J. A. Craig, J. G. Malcolmson and George H. Powell.

A company is being organized at Atlanta, Ga., by William Nebring for the purpose of establishing tool works at the new town of Chattahoochee, which will be built on the river of that name, near the city of Atlanta.

It is stated that the Baker Wire Company contemplate the establishing of a branch wire works at Sulphur Springs, Texas.

Parties from New York and Philadelphia will, it is stated, establish a \$100,000 pipe works at New Birmingham, Texas.

The Alabama Construction and Mining Company of Talladega, Ala., will hold a stockholders' meeting on the 10th of next month, with a view to deciding the question of increasing their capital stock for the purpose of adding a number of improvements.

The Peterkin Mfg. Company have been incorporated at Rock Hill, S. C., with a capital stock of \$20,000 to manufacture agricultural implements and other articles. The incorporators of the company are J. A. Peterkin, David Henderson, W. L. Roddy and others.

The Gibson Agricultural Works at Chattanooga, Tenn., have signed a contract for the removal of their agricultural works to Harriman, Tenn., where a much larger plant will be erected and the name of the corporation changed to the Harriman Agricultural Works.

The statement is made that a strong English syndicate have recently purchased 51,000 acres of iron and coal land and 5,000 acres of town site property in the Sequatchee Valley, paying therefore \$400,000. This syndicate, it is stated, will absorb the new town of Kimball, and will organize a company to expend \$2,000,000 in developing iron and coal mines and in building a new town.

Work has commenced at Staunton, Va., upon the building for the Kroder Brass Works. This building will be two stories in height, 200 x 50 feet. E. H. Norton is general manager of Mr. Kroder's works in New York City and is superintending the construction of the plant at Staunton, and after it is completed he will be stationed at that place permanently as superintendent of the works. Plans are being drawn for three other buildings.

At a meeting of the directors of the Pruyne Potato Digger Company, held in Hoosick Falls, N. Y., the following officers were elected for the ensuing year: President, Henry S. Pruyne; vice-president, George E. Greene; secretary, Mrs. H. S. Pruyne; treasurer, A. L. Johnston. A finance committee was appointed, consisting of G. Frank Rising, Earl Watrous and Henry S. Pruyne. The company now have on hand about 600 orders for their machines and will soon erect a large plant. At least 50 mechanics will be employed in the manufacture of the potato digger.

The vessels that will soon be given names by Secretary Tracy are the 5500-ton cruiser No. 6, building at the Union Iron Works, San Francisco; cruisers Nos. 9 and 10, of 2200 tons each, building at the Columbian Iron Works, Baltimore; cruiser No. 11, of 2000 tons, and three steam tugs, building by Harrison Loring of Boston; gunboats Nos. 5 and 6, of 1050 tons each, and a ram for harbor defense building by the Bath Iron Works; the practice vessel, building by S. L. Moore & Son, Elizabeth, N. J., and the protected cruiser No. 12, of 7400 tons, building by William Cramp & Sons. A great many cities, notably those bearing the euphonious names of Sioux City, Ottumwa, Oshkosh, Boisé City, Kalamazoo and Dubuque have requested that their names be given to the new vessels.

The French Government has notified the merchants of France to claim in their relations with Brazil equal privileges of trade with the merchants of any other nation. This claim is made under "the most favored nation" clause of the commercial treaty of Brazil with France.

The Canadian Copper Company of Cleveland, Ohio, the owners of mines and smelting works in the famous Sudbury copper and nickel district, announce that S. J. Ritchie is no longer connected with them.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., March 24, 1891.

Pig Iron.—Consumers appear to be manifesting more interest in the market than they have done for some time past. Good brands are perceptibly scarcer, and although regular customers are for the present getting all they require at current rates, it is not easy to make extended engagements unless at some trifling advance on to day's figures. Buyers are not responding to anything of that kind, however, the movement being a precautionary one on both sides. That is to say, if the Coke strike is likely to be maintained for any length of time, buyers would like to have options at present prices, while for the same reason sellers would prefer to have their hands free, so as to secure whatever advantages might accrue to them under such a contingency. Apart from this, there is nothing in the market to indicate the slightest change. Outside Irons are available at figures recently ruling, and, on the whole, almost any brand of Iron can be had at the old prices, although there is an undoubted firming up in the best mill Irons, and to some extent in Foundry Irons also. Probably this feeling would be more pronounced, but for the fact that no one expects the Coke strike to be of long duration, while its collapse would be the signal for realizing in every direction. Up to this date there can be no doubt that the strike has been beneficial to the Iron trade. It has compelled a curtailment of production in many instances, and has enabled others to realize on stocks, which would have been very burdensome, but for the relief brought about by the means stated. The market is in a very healthful condition, however, and while there is not likely to be any material change in prices, moderately free sales are being made at about the following prices for lots delivered in consumers yards:

Ohio Softeners, No. 1x	\$19.00	@	\$19.50
Ohio Softeners, No. 2x	18.00	@	18.50
Standard Penna, No. 1x	17.50	@	18.00
Standard Penna, No. 2x	16.50	@	17.00
Medium Penna, No. 1x	17.25	@	17.50
Medium Penna, No. 2x	16.00	@	16.25
Virginia, No. 1x	16.75	@	17.50
Virginia, No. 2x	15.75	@	16.00
Standard Neutral All-Ore Forge	14.75	@	15.25
Ordinary Forge Cinder mixed	14.00	@	14.25
Charcoal Car-Wheel Iron	21.00	@	25.00

Spiegeleisen.—There is no demand for either Spiegel or Ferro, for which sellers quote \$28 @ \$28.50, duty paid, for 20 % Spiegel, and \$61.50 @ \$62.50 for 80 % Ferro. Sales of 80 % Ferro are said to have been made at \$60.50, Baltimore, but the transaction cannot be traced, and is supposed to be mythical.

Steel Billets.—It is almost impossible to do more than give the general asking prices, as bids are not being made, neither have sales been reported for some time past. As a rule, \$28.50, delivered, is considered an inside figure for Nail Slabs, and about \$29 for 4 x 4 Billets, but consumers seem to be full, and until they can see a better market ahead for their products, are determined not to load up at anything near the prices asked. An offer for several hundred tons Billets for rolling into Sheets was made and refused to-day at a figure equal to \$28.50, delivered, \$28.75 being sellers' price.

Steel Rails.—There is still nothing but a small hand-to-mouth business doing, although it is felt that every day's delay only tends to strengthen sellers' position. Rails must be had before long, and in liberal quantities, too, and it should cause no surprise to see buyers bidding over

each other's heads soon to secure prompt deliveries. Meanwhile mills are open for business at \$30, f.o.b. cars, which figure is said to be an absolutely firm quotation.

Muck Bars.—Buyers and sellers are waging a sharp contest between \$26.50 @ \$27, delivered. There is rather more disposition to buy, and on the whole the feeling is a trifle firmer, although sales in 500 ton lots have been made within a day or two at both \$26.50 and \$27, delivered. Price in a measure depends on the rate of freight, and upon which party is under the greatest necessity to make the trade.

Bar Iron.—Business in this line does not improve, and on the whole prices are not as firm as they were a week ago. Common or medium quality Bars can be bought at extremely low figures, but even the best-known mills have brought their figures down to \$1.75 and \$1.80, so that it may be easily imagined that outsiders are a good deal below these quotations. Of course business may pick up sharply before long; it ought to do so, and probably will, but meanwhile buyers with the right kind of specifications can almost make their own rates for the present.

Skelp Iron.—This interest, which for the past year or two has shown great activity at this season, is at the moment practically dead. There are very few orders in hand, and still less in sight, so that \$1.75, delivered, for Grooved, and \$1.85 @ \$1.90 for Sheared are merely asking prices, with no sales beyond 50 or 100 ton lots, at about the figures named.

Plates.—There is some demand as usual, but it is in small lots, and so sharply competed for that there is no chance for better prices. Many of the mills are running close to the end of their order books, while others are a little better off, owing to parties specifying for lots which have been held in abeyance. Prospects are not essentially different from what they have been for some weeks past, but with better weather and a possibility for outdoor operations being carried on, the trade are hopeful of an early improvement, although in the meantime prices are greatly demoralized. The usual asking prices for lots delivered in consumers' yards are nominally as follows:

	Iron.	Steel.
Ship Plates	2.00 @ 2.10¢	2.05 @ 2.10¢
Tank	2.00 @ 2.10¢	2.05 @ 2.10¢
Bridge Plate	2.05 @ 2.15¢	2.15 @ 2.20¢
Shell	2.20 @ 2.30¢	2.30 @ 2.40¢
Flange	3.10 @ 3.20¢	2.50 @ 2.60¢
Fire-Box	3.75¢	3.25 @ 3.75¢

Structural Material.—There is a moderately active movement in small lots, but not sufficient to impart much life or activity to the trade. Mills are barely holding their own, but manufacturers are sanguine of an early improvement. Business has been a good deal retarded by the extremely bad weather, and a change for the better is likely to be reflected in the demand for Structural and other material of that character. Prices for lots delivered are somewhat irregular, but usually quoted about as follows: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—There is a very fair degree of activity in this department, and, although prices are weak and irregular, business appears to be more plentiful than it has been for a long time past. Best makes are quoted about as follows:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.15¢ @
Best Refined, Nos. 25 to 26	3.30¢ @
Best Refined, No. 27	3.40¢ @
Best Refined, No. 28	3.50¢ @
Common, ½¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¢ @ 3¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ 3¼¢
Best Soft Steel, Nos. 25 to 26	3½¢ @ 3½¢

Best Soft Steel, Nos. 27 to 28 4¢ @ 4¢ || Best Bloom Sheets, ¼¢ extra over the above prices. | |
| Best Bloom, Galvanized, discount | @ 65 % |
| Common, discount | @ 67½ % |

Old Rails.—Nothing doing. Shipments from abroad could not be had for less than \$23.50, ex-ship, duty paid, which figure is the outside one consumers are willing to pay for small lots delivered in their yards; but there is no disposition to make offers, so that prices are purely nominal.

Scrap Iron.—Market dull and unchanged. Desirable qualities find buyers at quoted rates; other descriptions are irregular, and hardly salable unless at some concessions from quoted rates, which are about as follows: No. 1 Railroad Scrap, \$22.50 @ \$23, Philadelphia, or for deliveries at mills in the interior, \$22.50 @ \$23.50, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14.50 @ \$15.50 for best Machinery Scrap; \$13.50 @ \$15 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$25 @ \$26 for Old Fish Plates, and \$17 @ \$18 for Old Car Wheels.

Wrought-Iron Pipe.—There is no improvement in this department. The demand is confined chiefly to small sizes, with little or no inquiry for other descriptions. Discounts are subjected to severe cuts, although nominally as before—viz.:

Butt-Welded Black	47½ %
Butt-Welded Galvanized	40 %
Lap-Welded Black	60 %
Lap-Welded Galvanized	47½ %
Boiler Tubes	50 %

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, March 23, 1891.

There is little to say in regard to any change in the market. Good Foundry Irons are very scarce and hard to get, and prices are inclined upward. There appears to be a hesitancy on the part of producers to sell in large lots, and there is also a hesitancy on the part of consumers to purchase in large round lots, so, taking it all around, timidity appears to be the ruling feeling. The furnaces are inclined to maintain a very conservative position, and the outlook is now that this position will be maintained for some months in the future.

Louisville.

LOUISVILLE, KY., March 23 1891

The Southwest, centering about in Kentucky, has been the field of a great many corporation failures. This cannot be hid from the outside criticism, and it causes moneyed men to wonder why it is in a State like Kentucky, which is reported to possess various mineral wealth, even claiming a greater coal area than Pennsylvania. This question suggests the true answer to the troubles. The sudden awakening up to these facts caused such wild speculation that the staid city of Louisville, whose capitalists are known for their conservative investments, hypothecated almost everything of value to raise cash for alluring ventures, and these in turn were capable of deposit because of the good names on them. A large portion of the business men of Louisville were living in such air castles when the trouble from abroad struck us last fall. A great many beautiful soap bubbles that were floating gracefully burst, some barely leaving a drop of water. What is true of this city is true of a large part of the Southwest. There are many safe business men who say the trouble is not over, but will be far-reaching unless a season of general prosperity springs up with more life than now prevails. It is often asserted that should most of the corporations and four-fifths of

the firms be called on to show their hands, that very few could produce 25¢ on the dollar of business they carry on, that indirectly every dollar owned is mortgaged several times over. Never have these facts been so patent as when the recent money squeeze came so near causing a general panic. The danger was not fully realized until after the worst was over. General confidence is restored in legitimate lines of business, but banks cannot be too careful in making loans on collaterals.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st.,
St. Louis, March 23, 1891.

Pig Iron.—The volume of business during the past week has been smaller than for some time past. Notwithstanding the decrease in production, the ratio of decrease in consumption seems about equal, and this feature of the market is becoming daily more prominent. Railroad work is scarce, and those who have contracts for material to be shipped monthly to railroads have been requested to defer shipments until further advised, and no new contracts are likely to be placed in the near future. The Coke strike is still on, and while it is difficult to predict when it will be called off, the feeling is gaining ground that it cannot last much longer than April 1. The advance in the price of Pig Iron has not been as large as was expected as the result of the strike, and it seems highly probable that prices will fall flat once the strike is settled, as there is not at the moment anything to sustain the market. There has been some Warrant Iron sold during the past week at prices that are about 25¢ per ton less than the highest as quoted below. Consumers seem determined not to purchase beyond their immediate requirements, and the talk of higher prices as the result of the Coke strike has made little or no impression on them. One hundred-ton lots with occasionally a sale of from 300 to 500 tons is about the maximum, and carload orders are much more plentiful than any of the amounts just mentioned. A few brands that are scarce are held at outside figures, but consumers have no difficulty in filling their wants. No. 1 Foundry is extremely scarce, and \$16.25, f.o.b. cars St. Louis, is the best that this grade of Iron can be bought for. Some concerns are experimenting with lower grades, and the demand for No. 1 is purely nominal. The demand for Ohio Softeners is only limited. No. 2 Foundry and Gray Forge are most in demand at \$15.25 and \$14.25 respectively. To sum the matter up, the market is not in a very satisfactory condition, and furnaces who are refusing to sell for delivery later than 30 to 60 days ahead, are likely to regret this action before the summer is over, as, at the prices at present prevailing, they are able to make a fair profit, and it is questionable whether these prices will be obtainable 60 days hence. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	\$16.00 @ \$16.25
Southern Coke, No. 2 Foundry,	15.00 @ 15.25
Southern Coke, No. 3 Foundry,	14.50 @ 14.75
Gray Forge.....	14.00 @ 14.25
Southern Charcoal, No. 1 Foundry.....	17.50 @ 18.00
Southern Charcoal, No. 2 Foundry.....	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry.....	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry.....	15.00 @ 15.50
Ohio Softeners.....	18.00 @ 19.00

Bar Iron.—Work in this department is only fair. Railroads are not in the market and mills have hard work to secure enough work to keep them employed. Jobbers, on the contrary, report a brisk demand, and state the spring outlook is

unusually promising. Prices are occasionally shaded both from mill and store, as circumstances compel, but on the whole are fairly well maintained as follows: Lots from mill command 1.65¢, East St. Louis. Jobbers quote 1.75¢ @ 1.80¢ for lots from store.

Barb Wire.—Mills are only fairly well employed. Once the weather gets settled an increased trade can be counted on. Country buyers do not seem anxious to purchase their spring stocks until it is absolutely necessary, and are unwilling to pay the recent advance. As there is little or no chance of a reduction in these prices it is more than probable that these parties will shortly be heard from. We quote as follows: Painted, 2.95¢; Galvanized, 3.50¢; carload lots 10¢ per cwt. less than above prices.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building,
PITTSBURGH, March 24, 1891.

Pig Iron.—There has been a fair degree of activity the past week, but no improvement in prices; on the contrary, the market, if anything is weaker, notwithstanding there is no evidence of an early termination of the Coke strike. While it is well known that there is a steady reduction in the stock in first hands, the supply still appears to be fully equal to present requirements, and the wonder is where it is all coming from. As the mills are nearly all in operation, and many of them working up to their full capacity, it is evident that the consumption is large, and if the Coke strike continues until May 1, as some predict, Iron will be getting scarce. A cargo of four barges of Sheffield (Ala.) Iron will come here within the next day or two, direct from that point, and the same boat has left three barges of this Iron at Wheeling. Some other lots have been contracted for to arrive by river, and appears to be about the only outside Iron coming into this market. We quote prices of home Irons as follows:

Neutral Gray Forge.....	\$14.75 @ \$15.00, cash.
All-Ore Mill.....	15.50 @ 16.00, "
White and Mottled.....	14.00 @ 14.50, "
No. 1 Foundry.....	16.75 @ 17.00, "
No. 2 Foundry.....	15.75 @ 16.00, "
No. 3 Foundry.....	15.00 @ 15.25, "
No. 1 Charcoal Foundry.....	23.50 @ 24.00, "
No. 2 Charcoal Foundry.....	21.50 @ 22.00, "
Charcoal Mill.....	17.00 @ 17.50, "
Cold Blast Charcoal.....	26.00 @ 28.00, "
Bessemer Iron.....	16.50 @ 16.75, "

The only sale of Bessemer reported was a lot of 3000 tons at \$16.50, cash, at Wheeling. It may also be noted in this connection that Wheeling has been buying considerable Forge Iron within the past few weeks.

Muck Bar.—Continues dull and prices are weak, but without quotable change; may be quoted \$27 @ \$27.25, with a lot inclined to cold short reported at \$26.75. Good strong Neutral is reported steady at \$27, with some sellers asking \$27.25.

Manganese.—Small sales of 80 % Ferro still being made at \$63 @ \$64. Trade generally reported very dull, consumers buying only for their immediate wants.

Manufactured Iron.—Trade continues backward and disappointing, but it is expected to improve as the season advances. What is wanted now more than anything else is some good settled weather to dry up the country roads so that all kinds of outside work can be resumed. In most parts of the country the roads are simply impassable, and this is not without its effect in keeping down the demand for all kinds of finished Iron. Moreover, labor complications, which continue quite numerous, are also having their effect in the same direction. Prices remain as quoted a week ago: Bars, 1.75¢ @ 1.80¢; Plate and Tank, 2.10¢ @ 2.15¢; No. 24 Sheet, 2.80¢ @ 2.85¢. All 60 days, 2 % off for cash. At valley mills Bars are quoted at

1.65¢ @ 1.70¢, half extras. Skelp Iron remains about as last quoted, 1.75¢, and Sheared, 1.90 @ 1.95¢, four months, 2 % off for cash.

Nails.—Cut Nails are still quoted in large blocks at \$1.60 @ \$1.65, 60 days, 2 % off for cash. Wire Nails are now quoted at \$2.10 for large lots. The demand has fallen off somewhat of late and the market is easier in consequence.

Wrought-Iron Pipe.—The demand is reported a little light at present, but is expected to improve next month; March is usually a dull month. Prices remain unchanged. Discounts on Black Butt Pipe, 47½ %; on Galvanized do., 40 %; on Black Lap, 60 %; on Galvanized do., 47½ %; Boiler Tubes, all sizes, 50 % off; Casing, all sizes, 50 % off.

Structural Iron.—There is some inquiry, but business, it must be confessed, is not panning out as well as expected. Prices continue easy, but we make no change in our quotations. Channels and Beams, 3.10¢; Angles, 2.05¢ @ 2.10¢; Steel Sheared Bridge Plates, 2.30¢ @ 2.35¢; Universal Mill Plates, Iron, 2.10¢; Refined Bars, 1.90¢.

Steel Plates.—There has been but little new business placed here of late, but mills are pretty well employed on old contracts. For some grades prices are lower: Fire Box, 4.25¢ @ 4.50¢; Flange, 2.75¢ @ 2.85¢; Shell, 2.55¢ @ 2.60¢; Tank, 2.20¢ @ 2.25¢.

Merchant Steel.—There is nothing new to report in this department of the Steel business. No change in prices. Tool Steel, 7¢, 7½¢ @ 8¢; Bessemer Machinery Steel, 2½¢; Crucible Machinery, 5¢; Crucible Spring Steel, 4¢; Bessemer do., 2½¢; do. Tire, 2.20¢; Steel Bars, 2.20¢.

Barb Wire.—There is a continued fair business, but prices remain unchanged, as follows: Glidden Painted, \$2 85; do., Galvanized, \$3.40; Four Point, Painted, \$2.80; do., Galvanized, \$3.35, f.o.b. Pittsburgh.

Wire Rods.—Continue quiet; there was a sale of 500 tons, reported at \$38, on cars at maker's mills. There does not appear to be much inquiry, but the mills are said to be pretty well sold up and are not hunting business, as they would otherwise be.

Billets and Slabs.—There is but little inquiry for Billets. We now quote at \$25.75 @ \$26.25. In addition to a light demand makers are soliciting business, which makes a difference as compared with when they were full of orders and quite independent. Nail Slabs are about the same as Billets.

Old Rails.—There has been very little inquiry the past week for Old Iron Rails, and the market, in addition to being very dull, is weak. Consumers in the Mahoning and Shenango valleys are buying very sparingly and do not want to pay above \$24, while sellers are asking \$25. The stock is not large, and with an improved demand a stronger market is looked for. A sale of 300 tons Old Steel Rails was reported at \$17.75.

Railway-Track Supplies.—There is a fair business, but no change in prices. Spikes, either Iron or Steel, 2.05¢, 30 days, f.o.b. at makers' works; Splice Bars, 1.90¢ @ 2¢; Track Bolts, 2.80¢ with Square and 2.90¢ with Hexagon Nut. This branch of business, it is expected, will improve next month.

Old Material.—There is still considerable inquiry for No. 1 Railroad Wrought, chiefly from the Mahoning and Shenango valleys, and we are advised of a couple of sales of 500 tons each at \$21 net ton, delivered there; also 1000 tons No. 2 do. at \$18 net ton, and 200 tons Leaf Spring Steel at \$22.40 gross ton. Old Car Wheels are quoted \$17 gross.

Chicago.

(By Telegraph.)

Office of The Iron Age, 59 Dearborn street,
CHICAGO, March 25, 1891

General business in the Northwest appears to be in exceptionally satisfactory shape as reflected in the weekly Clearing House returns, which show handsome gains over last year in all the leading Northwestern cities. Railroad earnings hold up well in the same territory. But the Iron trade presents a marked contrast to this showing; transactions seem to grow smaller from month to month or week to week until there are very few features worth reporting. The Connellsville Coke strike, which is now in its seventh week, has not had the effect of advancing prices as was anticipated when it was first threatened. Some prices have hardened, it is true, but not enough to drive consumers to anticipate their requirements. The only benefit that the Iron trade has experienced from the strike is the prevention of a serious slump in values, which would have occurred before this time as a result of the greatly restricted consumption. There is no promise of improvement in the near future.

Pig Iron.—The decided scarcity of Ohio Black Bands is operating to the advantage of sellers of other Ohio softeners, who have done a good business the past week and are now able to get a trifle above their recent prices. This improvement is, of course, but a temporary condition. Other Coke Irons are selling merely in carload lots. There are not many inquiries for either local or Southern Coke Iron. This is accounted for by the fact that the general foundry business is still very light, and until foundrymen have an improved demand for their products they will purchase very sparingly. Lake Superior Charcoal is quiet, but consumers are on the alert for big bargains, and it appears reasonably certain that at 50¢ to \$1 below our quotations they would not hesitate to load up with enough to meet their wants far into the future. The persistence with which the search for bargains is made forces the belief that some of these consumers will need Iron earlier than they are willing to admit. We quote:

Lake Superior Charcoal.....	\$18.00 @	\$18.50
Local Coke Foundry, No. 1.....	15.50 @	16.00
Local Coke Foundry, No. 2.....	15.00 @	15.50
Local Coke Foundry, No. 3.....	14.50 @	15.00
Local Scotch.....	16.00 @	16.50
Ohio Strong Softeners.....	18.50 @	19.00
Southern Coke, No. 1.....	16.25 @	16.75
Southern Coke, No. 2.....	15.75 @	16.00
Southern Coke, No. 3.....	15.25 @	15.50
Southern, No. 1, Soft.....	15.75 @	16.00
Southern, No. 2, Soft.....	14.50 @	15.00
Southern Gray Forge.....	14.50 @	14.75
Tennessee Charcoal, No. 1.....	18.50 @	19.00
Alabama Car Wheel.....	22.50 @	23.50
Coke Bessemer.....	17.00 @	17.50
Hocking Valley, No. 1.....	18.25 @	18.75

Bar Iron.—Very little business is reported. Sellers consider 100 tons a good order now. Local mills continue to quote 1.70¢, half extras, Chicago, and the Valley mills 1.60¢, at mill, for the smelt business current. Prices are weak, however, and a large order would excite severe competition among makers. The assignment of the Milwaukee Bridge and Iron Works does not tend to improve the situation.

Structural Iron.—Manufacturers report a most excellent demand for Beams and other Structural Material of all kinds. New work is constantly coming forward, and although large structures are slow to get into shape for contracting, a miscellaneous business is steadily increasing.

Sheets.—New business in Black Sheets slow, but the mills are quite generally adhering to 2.85¢, at mill, for No. 27. Galvanized Iron is quiet, but unchanged. Jobbers quote 3.30¢ for No. 20 Common Black, and 65 % off for Juniata Galvanized.

Plates.—The condition of this branch is still quiet, with prices as previously quoted, but shaded according to circum-

stances. Nos. 10 to 14 Iron Sheets, 2.75¢ @ 2.80¢; Steel Sheets, 2.90¢ @ 3¢; Tank Iron, 2.55¢ @ 2.65¢; Tank Steel, 2.65¢ @ 2.75¢; Shell Iron or Steel, 3.25¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.25¢ @ 5.5¢; Boiler Rivets, 4¢ @ 4.25¢; Boiler Tubes, 50 % off.

Track Supplies.—Several round lots of Steel Rails have been sold since our last report, but no large orders were taken. Good inquiries are coming up which are expected to lead to more business at an early day, so that prospects are a little better than they were last week. Manufacturers continue to quote \$31 with the usual advance for small quantities. Splice Bar orders have been taken to some extent. Makers quote \$1.90 @ \$1.95 for Iron and \$2 @ \$2.05 for Steel Splices. Spikes range from \$2 to \$2.10 according to quantity. Track Bolts are in light demand, with Hexagon Nuts quoted at \$2.85 @ \$2.95 according to quantities.

Merchant Steel.—Some improvement is noted in the railroad trade in Tool Steel, but otherwise no new feature has developed.

Old Rails and Wheels.—Old Iron Rails are held at about \$23.25, but if any transactions have occurred they are being carefully concealed. The slight spurt in old Steel Rails is over and they are now very dull at \$15 @ \$17.50, according to length. Old Car Wheels are not very plentiful, but the demand is also light, with quotations nominally \$17 @ \$17.25.

Scrap.—The railroads are offering considerable quantities of old material, which consumers are purchasing direct at low prices. Steel Scrap is again neglected. Cast and other cheap material are very dull. Selling prices per net ton are about as follows: No. 1 Railroad, \$18.50 @ \$18.75; No. 1 Forge, \$18 @ \$18.25; No. 1 Mill, \$13.50 @ \$14; Fish Plates, \$21; Axles, \$24; Pipes and Flues, \$12.50 @ \$13; Horseshoes, \$18; Cast Borings, \$8 @ \$8.50; Wrought Turnings, \$11.50; Axle Turnings, \$13; Machinery Cast, \$12; Stove Plates, \$8.50 @ \$9; Mixed Steel, \$11; Coil Steel, \$15; Leaf, \$16; Tires, \$18.

Metals.—Casting brands Copper are firmer and an early advance is anticipated. They are still quoted 11.75¢, while Lake is held at 14.25¢, carload lots. Spelter continues firm at 5¢ @ 5.25¢, but transactions are limited.

Pig Lead.—Dealers report the market dull. Considerable metal was offered at 4.15¢, but resulted in few trades, as consumers' ideas are still below this figure. On the other hand, the bids of 4.10¢, 4½¢ for April Lead have bought no metal and show the firmness of holders. The closing is steady at these quotations. The St. Louis market has been active during the week, and the price has held very steady at 4.10¢. Sales will foot up close to 1000 tons part shipment Lead and mostly at 4.10¢. The closing is firm at this quotation.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date March 23, 1891, say: It is a somewhat difficult matter to discern any interesting features that have occurred in the Pig Iron market in the week under review; in fact changes of any kind are not easily observable, owing to the fact that the market remains almost stagnant. Some larger buyers are, however, closely observing the market for Lake Superior Charcoal, and considerable lots have been sold during the past week at ruling figures, and instead of being in the East, as those reported in our last week's letter, were in the West, and largely to Malleable manufacturers. The continuance of the

Coke strike has caused a few other furnaces to go out of blast, making the purchase of either high or low grade Northern Iron scarcely possible. Also there have been no transactions of any magnitude whatever of Southern Iron. Altogether the market is perhaps on a little better plane respecting price, but quotations, notwithstanding, we must repeat the same as last week:

Lake Superior Charcoal, all numbers.....	\$18.50 @	\$19.00
Lake Superior Coke, Bessemer.....	18.00 @	18.50
Katabdin (Maine Charcoal).....	23.00 @	24.00
Lake Superior Coke Foundry, all ore.....	18.00 @	18.50
Ohio Blackband (40 per cent.).....	18.00 @	18.50
Southern No. 1.....	16.25 @	16.75
Southern Gray Forge.....	14.75 @	15.25
Jackson County (Ohio) Silvery.....	18.25 @	18.75

Cleveland.

CLEVELAND, March 23, 1891.

Iron Ore.—There has been considerable speculation during the past week regarding prices for this season's output of ore, but very little has been actually accomplished. It seems to be conceded that prices will be from \$1.25 to \$1.50 per ton below those of last year, but no quotations have thus far been promulgated. Eastern furnacemen are asking for prices on Bessemer Ore, but as the market does not seem likely to open earlier than the middle of May, little information is given in return. It is quite natural that the furnacemen in the Mahoning Valley should be out of the market altogether. They have many thousand tons of 1890 Ore still on hand and their furnaces are idle, with no promise of an early resumption of business. The railroad companies seem quite able to furnish all the necessary cars for forwarding Ore to the furnace, but, as no Ore is needed, very little is being sent. Everything indicates a late opening of navigation. The sales to date, outside of those made by the Norrie mine and the Non-Bessemer Ores for Western delivery, are insignificant. If the market exhibits any considerable activity earlier than June 1 local dealers will be greatly surprised.

Pig Iron.—The market is absolutely featureless. If there has been any change in the situation it has been for the worse. The market is very dull, and buyers are only attempting to cover their immediate requirements. Only scattering and generally insignificant sales of Foundry and Mill Irons are reported and these at prices which are no improvement over last week's quotations. Dealers look hopefully into the future, but can give very few reasons for their anticipations.

Old Rails.—Only a limited amount of business is being transacted. Sales of Old Americans at \$24 @ \$24.50 are reported, but the lots were small. Old Steel Rails are dull.

Scrap.—No. 1 Railroad Wrought is apparently in somewhat better demand at \$20.50 @ \$21; Old Car Wheels are quoted at \$16.50 @ \$17 and Cast Scrap at \$14.

Manufactured Iron.—The market maintains a fair degree of activity, with Common Bar bringing 1.75¢ @ 1.80¢ and Muck Bar \$27.

Barb Wire.—The mills are doing a good business and an excellent demand is reported at standard quotations.

It is unofficially announced that the Variety Iron Works will resume business within 30 days.

Governor Abbett appointed as Commissioners of New Jersey to the World's Fair at Chicago Edward Bettle of Camden, Walter Lenox of Mercer, Millard F. Ross of Middlesex, Peter E. Swartzeller of Warren, Garrett A. Hobart of Passaic, David Dodd of Essex, Peter Hauck of Hudson and John C. Smock of Mercer.

Financial.

Recovery from the extreme depression which prevailed a few months ago is slow, and there is a marked absence of anything like snap in trade circles. Events like the failure of the Washington National Bank of this city, immediately following that of the Keystone National Bank in Philadelphia occur too frequently to permit the speedy return of confidence. Not a little apprehension was excited in some quarters by the announcement of a new policy in export of gold shipments, the Treasurer refusing to sell bars even at a premium of 40¢ per \$1000, suggesting the possibility that gold might soon be at a premium. It is to be considered, however, that United States bonds which formerly served in making foreign exchange, have gradually disappeared and are no longer available in quantities. Secretary Foster says: "There is no intention to throw too many obstacles in the way of legitimate business. My policy will be to decide on gold shipments as they come along, and to decide as the interests of the Government and the public may, in my judgment, demand at the time." In reply to the suggestion that if the Government kept on supplying coin for shipment it might have to be at the additional expense of coining its stock of gold bars, Secretary Foster replied significantly that he did not see the use of coining gold anyway. No one wanted gold coin, he said, any more than they wanted silver coin, and it was much more sensible and businesslike to issue certificates on bullion without going to the expense of making coins that were only piled away in the vaults. Bankers regard a moderate export of gold as not only natural but reasonable. An adverse balance of trade must be settled with either coin, securities or merchandise. Government is taking the silver; grain is held above the parity of foreign markets. Europeans are not buying securities—hence, cotton and gold are about all that remain. Wheat is 25¢ a bushel higher than a year ago and the price of corn is about double. The Trunk Line Association met in this city to arrange a settlement of lake and rail rates and agreed that the schedule to take effect with the opening of navigation will be the same as that which was in force at the opening of the season last year. Shipowners at Cleveland and Detroit decide to delay their boats until May 15. At the South trade is gradually recovering from the financial depression especially felt in the cotton crop region. Goods have been generally well distributed, and the usual spring trade is in progress.

Bar silver closed in London at 44½d per ounce, and in New York at 97½¢ @ 98½¢ per ounce. Certificates are lower. Exports of merchandise from New York for the week, \$7,130,000. No further gold shipments have been announced. The anthracite stocks are being maintained in the face of the lower prices for coal.

The stock market was firmer, but dull. On Friday lower prices in London, applications for gold for export and the failure of the Keystone Bank caused a heavy opening, but later there was a recovery, led by the grangers. On Saturday there was a rise in Ontario and Western, attributed to its improved coal prospects in Western markets. Neither gold exports nor the bank statement exerted much effect. On Monday Rock Island declared their usual quarterly dividend of 1¢, as expected. The effect was to cause an advance all through the list. On Tuesday sterling exchange was a little easier, owing to bills made by shipments of cotton and flour.

In bank stocks, 25 shares of Western National sold at 100½ @ 100½.

Railway bonds were firm. Government bonds steady at quotations as follows:

U. S. 4½s, 1891, registered..	102
U. S. 4½s, 1891, coupon ..	102
U. S. 4s, 1907, registered ..	121½
U. S. 4s, 1907, coupon ..	122¼
U. S. currency, 6s, 1895.....	110

The merchandise markets, except for grain and provisions, show little life. Wheat advanced, ostensibly on news of bad crops in France. Corn touched 78¢ per bushel, the highest for many years, and flour has sold freely for the United Kingdom, helped by low ocean freights. Provisions were higher, stimulated by dear grain. Cotton was weaker. Sugar dropped, in hopes of free selling before April 1, when the duty comes off.

Money was easy at low rates, apparently unaffected by withdrawals of gold for Europe. Losses from this source, together with free shipments to the interior, were made good by Government disbursements on pension account and otherwise. Moreover, the supply included about \$2,000,000 of State taxes, refunded under the direct tax refunded law of the last Congress. Time money was 4½ @ 5%, according to period, on good mixed collateral. The market for commercial paper is dull. Prime endorsed bills receivable are quoted at 5 @ 5½%, and first-class single-name paper at 6 @ 7%. The weekly statement of the associated banks shows a loss in surplus reserve of \$738,200, reducing the amount held in excess of the 25% limit to \$9,055,375. The items show an increase in deposits of \$3,485,600 and an expansion in loans of \$3,959,200. The Washington Bank was not in the Clearing House. It began business last June with \$300,000 capital, and its failure is due to injudicious loans. The failure of the Keystone Bank had very little effect in Wall street, and its correspondent in this city, the Tradesman's Bank, reported that it was not a loser by the suspension. Sterling exchange dull and easier. Posted rates, \$4.87 @ \$4.89½.

A bill providing for the organization of international banking companies, just introduced in the New York Legislature, is practically the same measure that was introduced at Washington, with the official advocacy of Mr. Blaine and President Harrison, differing in this respect that the Washington measure provided for an international bank with a capital of \$25,000,000.

The Bureau of Statistics reports that the exports of merchandise from the United States in February aggregated \$74,592,800, and the imports \$65,926,778, making the excess of exports over imports \$8,666,022, as compared with an excess of \$7,218,345 in February, 1890. For the 12 months ended March 1 the total exports were \$869,037,608, and the imports \$825,124,589, an excess of exports of \$43,913,019, against an excess for the preceding year of \$72,886,116.

Coal Market.

The general sales agents met in this city on Monday and arranged the spring schedule of prices, which, it will be observed, range from 10¢ to 25¢ per ton higher than the figures given in these columns for some time past as indicative of actual current transactions. Not for months have prices been higher than those current last September, taking the market as a whole, so that the latest announcement is little more than an authorized recognition of the facts. Prices for the spring trade compare with those of last year as follows:

	1891.	1890.	Increase.
Grate	\$3.50	\$3.35	0.15
Egg	3.60	3.35	0.25
Stove	3.75	3.50	0.25
Chestnut	3.50	3.35	0.15

Reading Hard White Ash, Broken, Egg and Stove, \$3.75; Chestnut, \$3.50;

Free-Burning Broken and Egg, \$3.65, Stove, \$3.75. Free-Burning Broken is 15¢ per ton higher than the other companies, and Egg 5¢ per ton higher.

Labor troubles in the Beech Creek region are very frequent.

As official quotations have of late been no better than a pretense, the new schedule carries with it a promise that prices will be maintained, and in this respect is an improvement. The result, however, must depend on a more faithful adherence to the allotment of 2,000,000 tons for April; otherwise the market will be gorged with excessive production, giving "individuals," who are always assumed to be the transgressors, a new opportunity to compete with success, being free from company obligations.

The reported Anthracite production last week was 667,300 tons, an increase of 142,644 tons compared with the corresponding week last year, and the total since January 1 is 6,774,484 tons, an increase of 1,585,000 tons compared with the same time in 1890.

The Bituminous carrying railroads have issued their schedules of freight tolls for the season of 1891-92, which will go into effect on April 1. The new rates show an advance of 10¢ per ton on Soft Coal from the mines to Baltimore and Philadelphia, and from the Cumberland mines to Philadelphia harbor for reshipment 20¢ per ton, while to New York the rates are advanced 15¢ from the Clearfield and Cumberland districts. Confidence is not strong that the roads will adhere to their programme. Operators have announced that consumers must pay a corresponding advance in price.

Navigation has opened on the Schuylkill and Raritan canals.

New York.

Office of The Iron Age, 90-102 Reade street, New York, March 25, 1891.

American Pig.—It has been the subject of some comment in the trade and of considerable disappointment to sellers that this market and the territory tributary to it has not developed in a more marked manner the effects of the great restriction in the production of Pig Iron. It should be noted that the reduction is chiefly in sections which contribute little to cupolas in this district, and has relieved it only by easing the pressure in competitive territory. New York and New England take very little Mill Iron, and consume very moderate quantities of off grade Irons. The supply of the grades which this market takes, the foundry grades, is by no means large. Confessedly, the Alabama furnaces make very little of the higher grades of Foundry Iron, and certainly have little surplus of them to offer in this market. In fact, at least one leading company has filled orders lately by withdrawing Iron from warrant yards. The result is that there is really quite a good current demand for good Foundry Irons. As reflecting the condition of affairs, we may state that B. G. Clarke of the Thomas Iron Company informs us that about two weeks since he had made up his mind that a reduction in the price of Pig Iron was in order. He had given instructions on Saturday to bill Iron to customers at \$1 less per ton. On Monday, before there had been time to act upon them, he countermanded the orders. Mr. Clarke states that thus far he has booked orders for delivery this year aggregating about 40,000 tons out of the product of about 180,000 to 190,000 tons. We have reason to believe that the greater part of the orders so booked are for Mill Iron and Pipe Iron. He states that he sees no reason for reducing prices on Foundry Irons, so long as his customers take all his product as fast as it is made.

The market is quiet, consumers buying only from hand to mouth, and rarely anticipating their requirements. The extreme range on Northern brands is \$17 @ \$18 for No. 1, \$16 @ \$16.75 for No. 2 and \$14 @ \$15 for Gray Forge. Southern sells at \$16.25 @ \$17.50 for No. 1 Foundry, \$15.50 @ \$16 for No. 2 and \$14 @ \$15 for No. 3, according to brand.

Spiegeleisen and Ferromanganese.—It has just become generally known in the trade that previous to the consolidation one of the Scranton mills bought several thousand tons of Spiegeleisen at a low price. The market may be quoted \$27.50 @ \$28.25, German and English. In Ferromanganese the principal feature of interest is the report that foreign makers have entered into an agreement to hold the price for the export trade at £11, which is equivalent to about \$64, at which small sales have been made. Reports emanating from Pittsburgh that Ferromanganese has sold as low as \$60 and \$60.25 in small lots at tidewater are unfounded.

Steel Rails.—The only sale of consequence made during the week is one lot of 12,500 tons, which, it is understood, has been purchased by the Huntingdon roads at \$30, at mill. There is a small order in the market for a New England road which will be closed to-day. The market is very dull, but the mills are firm at their price, \$30.75 @ \$31, at tidewater.

Swedish Iron.—Only a moderate business is being done at \$59 for Rivet Rods and \$62 @ \$63 for jobbers' specifications of Bars.

Cotton Ties.—Domestic mills have taken contracts for several thousand tons lately. We note a sale of 500 tons for delivery close to the border. We quote \$1.35 @ \$1.40 per bundle, delivered at Gulf ports.

Manufactured Iron and Steel.—The only items of interest are the low offerings of foreign Beams, the Charleroi, Belgium, makers offering them at 2.40¢, on dock. Business generally in Structural Iron and in Plates is light. We quote Angles, 2¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.25¢; Tees, 2.5¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2.05¢ @ 2.15¢ for Tank, 2.35¢ @ 2.6¢ for Shell, and 2.6¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

Rail Fastenings.—The market is dull at \$1.90 @ \$1.95 for Spikes, 1.70¢ @ 1.80¢ for Angles and 2.65¢ @ 2.75¢ for Bolts.

Old Rails.—The demand is very light, and buyers' views are considerably below those of holders.

Imports.

Hardware, Machinery, &c.

American Steel Barge Co., Mach'y, pgs., 38
Baker, Hermann & Co., Hardware, cs., 18;
Arms, cs., 38
Boulton, Bliss & Co., Mach'y, box, 1
Brunner Bros., Mach'y, pgs., 5
Field, Alfred & Co., Mdse., cs., 10
Frasse, P. A. & Co., Mdse., cse., 1
Fuch & Lang, Mach'y, cs., 35
Folsom, H. & D., Arms, cs., 3
Graef Cutlery Co., Cutlery, cs., 4
Godfrey, M. C., Arms, cs., 27
Hammacher, S. & Co., Nails, cs., 22
James, Emile, Iron Goods, cs., 6; Sewing Machines, cs., 61
Jennings Luce Works, Mach'y, cs., 3
Jordan, A. J., Mach'y, pgs., 4; Chain, cs., 2
Lau, J. H. & Co., Arms, cs., 14
Mecham Arms Co., Arms, cs., 20
Meyer, Aubrey E., Mach'y, pgs., 29
N. Y. Central R. R., Mach'y, cs., 16
Riesthal, A. de & Co., Nails, cs., 97
Rockaway Mfg. Co., Chain, cs., 2
Sheldon, G. W. & Co., Mach'y, cs., 25
Sumner, Chas. P., Mach'y, cs., 14
Van den Toorn, W. H., Arms, cs., 4
Vought & Williams, Anvils, 52
Vom. Cleff & Co., Chains, cks., 7
Werleemann, H. & Co., Arms, cs., 7
Wiebusch & Hilker, Arms, cs., 30; Hones, cs., 52; Anvils, 84; Mdse., cs., 10
Witte, John G. & Bro., Iron Ware, cs., 22
Order—Mach'y, pgs., 10; Boilers, 40; Pots and Pans, 464.

Metal Market.

Copper.—No radical change has taken place in the market for this Metal during the past week. It is understood that orders have been placed for choice brands of Lake Superior product—Wire Bars chiefly—deliveries up to and including the month of June at 14¢ $\frac{3}{4}$ lb. The statement is also made that the Calumet and Hecla Company's output is largely taken up in deliveries on orders for electrical supplies and that the Quincy is behind on orders. In the face of this, however, comes the report from Boston that over 16,000,000 lb of Copper are awaiting shipment at the C. and H. smelting works, and from another source it is learned that the item of transportation charges is a factor in restricting the movement of supplies from some other mines. In short, the indications are that an abundance of Lake Superior product will be forthcoming when navigation is clear. Meanwhile small quantities of Lake Ingot are selling at 13 $\frac{3}{4}$ ¢ @ 13 $\frac{1}{2}$ ¢, and the demand is by no means brisk at this writing. Recent floods and washouts have caused some restriction upon the out turn and movement of Copper in Arizona latterly and served to momentarily stiffen prices. For Arizona Ingot 12 $\frac{1}{2}$ ¢ @ 13¢ are considered close figures at present and 16 $\frac{1}{2}$ ¢ is apparently inside value for Pig Copper. Sales are merely fair, however, and the demand is spiritless. Common casting brands are quoted at 11 $\frac{1}{2}$ ¢ @ 11 $\frac{1}{4}$ ¢, within which range sales to a very fair total amount have been made. As a rule consumers generally adhere to a conservative policy, and the export demand at present is only fair. The Santa Fé Copper Company have begun shipping matte. Two carloads containing about 40 tons of 60 % matte already have been moved. The new concentrator is said to be working satisfactorily.

Pig Tin.—The condition of the market is practically the same as it was a week ago. Speculative transactions involving several hundred tons at 20.10¢ @ 20.20¢, spot, 20.05¢ @ 20.15¢ for March, 20.05¢ @ 20.20¢ for April, and 20.10¢ for May delivery have taken place, and the most has been made of opportunities offered to sustain values without incurring the liability of extensive purchases for "long" account. Still, consumers buy in a very conservative way, and jobbers do not appear to take more Tin than may be needed to provide for imperative wants. To all accounts the supply on spot is fairly well under control, but it is the fact, nevertheless, that out of town buyers are accommodated at prices very close to those recorded on local "net cash" transactions. On Wednesday market sales were made of round lots at 20.20¢, net cash on spot. Jobbing prices were 20 $\frac{1}{2}$ ¢ @ 20 $\frac{3}{4}$ ¢, as to size of lot.

Pig Lead.—Prices are a shade higher and the market is apparently firm at the advance, although devoid of spirit. Consumers have purchased sparingly, jobbers' operations have been on strictly conservative lines, and speculative interest is conspicuous chiefly by its absence. In short, the undertone of firmness seems to be due chiefly to the reserved offering by smelter. Spot stock is quoted at 4.85¢ @ 4 $\frac{1}{2}$ ¢ and up to 4.45¢ is named on deliveries 60 days ahead, with 4.42 $\frac{1}{2}$ ¢ bid for single carload lots for June.

Spelter.—The condition of the market is without visible change. A few carloads have been placed at former prices, but the demand is of perfunctory character and the supply merely fair. Prime Western may be secured in carload lots at 5.10¢ for early shipments, but up to 5.15¢ is still quoted in same quarters.

Antimony.—The demand has not changed in any particular, and prices have

varied in a slight degree only. Hallett's⁸ is quoted at 15 $\frac{1}{2}$ ¢ @ 16¢; LX at 16 $\frac{1}{2}$ ¢ @ 17¢, and Cookson's at 17 $\frac{1}{2}$ ¢ @ 18¢, in wholesale quantities.

Tin Plate.—Business in this line has been on a very moderate scale and the demand at this writing is slow and cautious. Large consumers have evidently covered their wants for some time to come and manifest indifference. Arrivals continue liberal, from which free offerings are made, with the effect of weakening prices for coke finish Plates more or less. Quotations for large lots on the spot are as follows: Coke Tins—Penlan grade, IC, 14 x 20, \$5.30; J. B. grade, do., \$5.37 $\frac{1}{2}$; Bessemer do., \$5.35; Siemens Steel, \$5.55. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85 @ \$6; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.35; for each additional X add \$1.50; Allaway grade, \$5.90 @ \$6; Grange grade, \$6.10; for each additional X add \$1. Charcoal Ternes—Worcester, 14 x 20, \$5.62 $\frac{1}{2}$; 20 x 28, \$11; M. F., 14 x 20, \$7.50; do., 20 x 28, \$15; Dean, 14 x 20, \$5.15; do., 20 x 28, \$10.80; D. R. D. grade, 14 x 20, \$4.90, do., 20 x 28, \$9.90; Mansel, 14 x 20, \$5.05; do., 20 x 28, \$10.10; Alyn, 14 x 20, \$5.15; do., 20 x 28, \$10.20; Dyffryn, 14 x 20, scarce, do., 20 x 28, \$10.62 $\frac{1}{2}$. Wasters—S. T. P. grade, 14 x 20, \$4.85; do., 20 x 28, \$9.62 $\frac{1}{2}$; Abercarne grade, 14 x 20, \$4.85; do., 20 x 28, \$9.50.

New York Metal Exchange.

The following sales are reported:

THURSDAY, March 19.

25 tons Tin, April	20.05¢
10 tons Tin, April	19.85¢
10 tons Tin, April	20.00¢
25 tons Tin, per S. S. Guy Mannering	20.05¢
115 tons Tin, April	20.05¢

FRIDAY, March 20.

10 tons Tin, April	20.10¢
25 tons Tin, March	20.10¢

MONDAY, March 23.

10 tons Tin, March	20.15¢
20 tons Tin, April	20.05¢

TUESDAY, March 24.

100 tons Tin, April	20.10¢
25 tons Tin, May	20.05¢

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, March 25, 1891.

Pig Iron warrants have undergone a further decline. Scotch sold down to 48/4, Cleveland to 38/9 and Hematites to 47/10, despite a continued reduction in stocks in warrant stores. The depression is attributed to the unsettled state of financial affairs, which, together with inactivity in the trade and increased production, has caused more or less anxiety to realize. Preparations are making for blowing in another Scotch furnace. The near approach of the shipping season and favorable prospects for a better export trade served to impart a better feeling during the past few days.

Latest transactions show a decline to 48/3 on Scotch warrants and 38/7 $\frac{1}{2}$ on Cleveland, but Hematites were a shade better, closing at 48/.

The Solway Hematite Works, at Maryport, it is reported, will soon shut down.

The Block Tin market has been quieter, and prices have undergone very little change. Exceptionally heavy shipments

The first 8 figures are specified with the following conditions:
 1. The first figure is 0 or 1.
 2. The second figure is 0 or 1.
 3. The third figure is 0 or 1.
 4. The fourth figure is 0 or 1.
 5. The fifth figure is 0 or 1.
 6. The sixth figure is 0 or 1.
 7. The seventh figure is 0 or 1.
 8. The eighth figure is 0 or 1.

Fig. 1. Lower prices for wheat were the result of a depressing influence from the war and depression in the domestic market. After 1933, for World Cereals, Inc., the price of wheat was \$1.00 a bushel, but it had to be shipped out.

...and the financial conditions, ... 20% ...

Modelo de la familia: En este tipo de familia, el padre es el proveedor principal y la madre es la responsable de la crianza de los hijos. Los hijos son educados en un ambiente de respeto y amor, y se les enseña a ser responsables y a respetar a los demás.

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It should be understood that the prices
noted in this column are for cash. The at retail

point to the adoption of a central and the high points are said to reflect the "point of view" of the group of individuals in the group.

Each week it was noted that the general distribution of *Tringa colonialis* was either higher than during the week preceding. The next week the percentage

Author improvement in the trade in both departments, and at present there is little if any cause for complaint. As a matter of fact, the spring season trade is at present

...the

and the consequent rise in the price of oil has dampened growth in more or less heating up the market for a wide array of lubricants and other oil derivatives, such as greases.

...in export demand for apparel. Most of this is not without effect. In point of fact, the Oil strikes with few victims; it has shown

forth since any previous time this year
is 1994. It means... The movement
value of these and Colorado has not been
as general it is pronounced as in the O

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Paints and Colors.

damages to both consumer products and
reputation for both providers provided

position is an extremely difficult one. It is not possible to make a decision on the basis of the information available at the present time. The only way to make a decision is to wait until more information is available. The only way to make a decision is to wait until more information is available.

But First and Foremost—So change in the curriculum for the past year has been made and desired for the improvement of the students at this time there is nothing special to be offered as regards the more important subjects. Speaking in a general way, the Department may fairly be said to afford satisfaction to all.

There, except that jobbers have experienced a rather free movement, there is nothing new to report on either Domestic or Foreign trade. Home manufacturers report a very late demand, in addition to the liberal movement of stock of "over" orders, and foreign brands are moving off in a satisfactory manner. Values are without change, but very firm, and the position of the market for Ores is nothing but indicative of movement in buyers' favor in the immediate future.

Colors.—In prices of Dry Colors there have been no important changes the past week, and the market as a whole shows steadiness. The only irregularity worth noting is in Quicksilver Vermilion, a "foreign" brand of which is selling at 1¢ lb. Under the combination schedule business in both Dry and Oil Colors and ready-mixed Paints has undergone further improvement, and purchases for immediate delivery and for shipment ahead are now quite in line with what is customary at this season of the year.

Miscellaneous.—There is still a season of Black Chick and bids of as high as \$1 are said to have been made for some lots now about. Whiting and Pacific White, while quoted no higher, are wanted, with a fairly active business passing. The arrivals of foreign China Clay and Talc are closely taken up as full immediate, and domestic brands remain wanted also under the influence of free demand. Terra Alba is finding quite liberal sale at full prices. The demand for Barley keeps up well, and the market very firm.

The Rockwell, Iron Mountain and Western Railroad, and the Chicago Iron Mining Co. have been sold to Eastern capitalists, with M. A. Hanna of Cleveland and Francis Jackson at their head, the latter company to be recapitalized at \$4,000,000.

Frank C. Roberts of Philadelphia, building for the Lookout Mountain Railway Company an incline railroad from S. Elmo, a suburb of Chattanooga, to a point on top of the Lookout Mountain near the New Hotel. The grades of the incline vary from 14 to 58 per cent. Work is being carried on night and day in expectation of completing the road in time for summer traffic.

One share in the Great Outlook Lumber Mine, in Virginia, is said to have sold recently at \$20,000. At one time the asking price was \$25,000. The cost to the original holders per share was a little over \$10,000.

W. K. McTigue, secretary and treasurer of the McClure Coking Company, died on Wednesday of grip.

HARDWARE.

Condition of Trade.

SOME improvement is noticeable in the volume of business, but the demand is not up to expectations, and some complaint is made of the sluggishness of the market. There is evidently a reluctance on the part of purchasers to place orders beyond their early requirements, on account of the prevailing feeling of uncertainty as to the course of prices. While the changes which have taken place during the last week or two are comparatively few, there appears to be something of an undertone of weakness, especially in staple goods. The continuance of bad weather, condition of the roads, and the fact that to a certain extent purchasers anticipated their wants earlier than usual are referred to as influences which, to a good extent, explain the present condition of the market. It is expected that with the advent of settled weather there will be a marked improvement in the volume and tone of business. More or less complaint is made in regard to collections.

(Chicago.)

(By Telegraph.)

The Shelf Hardware business is running irregularly with days of heavy trade sandwiched between days of comparatively light sales. In accounting for the unsatisfactory results from the efforts of the traveling salesmen, very general complaint is made of the condition of country roads, which are either so rough or muddy at present that work in agricultural sections is seriously impeded, causing a slack demand for all kinds of goods, but particularly Hardware. At the same time they report most excellent prospects for a good trade as soon as the season has advanced far enough to dry up the roads. A great deal of building is projected in the Northwest, particularly in Iowa, and the demand for Builders' Hardware will be large. In comparing the course of trade this year with last it is well to bear in mind that the very heavy movement in staple goods in January anticipated March business to a great extent; the average for the first three months' Hardware trade of this year will run very close to the average of the corresponding period of last year. Staples are now moving only in a limited way, fully three-fourths of the goods now going out consisting of straight Hardware. The jobbers of Heavy Hardware are still favored with an excellent condition of trade due to the activity among wagon makers and other manufacturing consumers. They are handling large quantities of Iron, Steel and Wagon Wood Stock. Collections, however, are not so good as they have been.

St. Louis.

(By Telegraph.)

The Hardware trade is in much the same condition as last noted. Trade is only fair and collections are reported as being very poor. Shelf Hardware is dull, and heavy goods are in the same condition. There is some little trade doing in Screen Doors and Windows, Refrigerators, Gasoline Stoves, etc., but outside of these specialties the market is flat. There is a fair demand for Sporting Goods at unchanged prices. Wire and Cut Nails are slow to move at \$2.35 and \$1.90 respectively. Barb Wire is shaded in some cases. There is no special change in prices on any line of goods, but should the present dullness continue it is quite probable that prices will be cut to facilitate selling.

Notes on Prices.

Cut Nails.—The market is sluggish and not characterized by quite so good a tone as for the past few weeks. Some sales of large lots are reported to have been made at slight concessions from prices which have been ruling. The general demand is, however, only moderate. Prices are on a basis of \$1.60, with 30 cents average for carload lots at mill.

Chicago, By Telegraph.—Manufacturers' agents for Steel Cut Nails are having an improved inquiry and better sales both in this territory and other sections of the West. They are trying to get slightly higher prices, and some of the largest makers are leading in the upward movement. Others, however, still quote the old rates, and it is hard to see how an advance can be sustained. Jobbers here report a light demand for Cut Nails, with \$1.85 their regular price from stock.

Wire Nails.—The market is not characterized by so firm a tone as has prevailed for the last few weeks, as some of the manufacturers are solicitous of obtaining orders and are making concessions. This is owing to the fact that most of them have the completion of old orders well in sight, and are in some cases already accumulating something of a stock. Quotations are on the basis of \$3.10 to \$3.15 for carload lots at mill, but it is rumored that these prices have been slightly shaded. Some of the manufacturers, however, refuse to make the lower figure. Small lots from store in New York are quoted \$2.40 to \$2.45, with 5 cents off for carloads.

Chicago, By Telegraph.—Manufacturers of Wire Nails report an improving demand as compared with the preceding two weeks. They complain, however, that trade is not what it should be at this season, merchants having anticipated their requirements too far in January and February. Prices have receded with efforts to secure more orders, and \$3.20, Chicago, is being quoted on factory lots. Jobbers are also inclined to

stimulate business by making concessions for Wire Nails, and now quote \$2.50 from stock without regard to quantity.

Barb Wire.—The market remains in the same condition as at our last review, manufacturers being generally occupied with orders and a fair amount of new business. Prices in general are well maintained on the basis of \$3.50 for Four Point Galvanized and \$2.95 for Painted, with the regular abatement of 10 cents for carload lots and the additional 5 cents off for jobbers and railroads. Terms, 60 days, or 2 per cent. discount for cash in ten days, with delivery at leading points.

The transfer of the Washburn & Moen Mfg. Company's patents to the Columbia Patents Company has been at length accomplished, and while this was regarded as practically assured, the actual transfer is looked upon by those interested with satisfaction, and has its effect in giving the market a good tone, especially in view of the fact that unfounded rumors have from time to time been current that some hitch had occurred in the negotiations. By this transfer the Columbia Patents Company have purchased all the Washburn & Moen patents having reference to Barb Wire and machinery for making the same. The object of the company is to put the whole business in such a position as will best tend to steady the market and give it a regularity which it has not had for a long time. The company are regarded as proceeding in a conservative and sagacious manner, their determination being to arrange the whole matter so as to serve the interests of the trade at large, as well as the manufacturers.

Chicago, By Telegraph.—Reports from various sources unite in characterizing trade as rather quiet, but prices are fairly well maintained. Rumors sent out from this point last week that the transfer of the patents had met with serious obstruction were incorrect. The meeting held here was for the purpose of arranging details among the manufacturers themselves with regard to the issue of licenses and other important matters which now have to be adjusted.

Stone.—The following revised price-list of Lake Superior Stone has been issued, under date March 15, by George Chase, 107th street, and First avenue, New York:

	Per pound.
Stone, 8 x 2 x 1 1/2	\$0.13
SBps, 3/4 to 5 inches long	23
Penknife Pieces, 3/4 to 5 inches long	24
High Pounds	25

Mounted in Polished Cases.

	Per dozen.		Per dozen.
3 1/2 x 1 1/2	\$1.75	4 x 2 1/2	\$2.75
4 x 1 1/2	2.00	7 x 2 1/2	3.00
5 x 2 1/2	2.50	8 x 2 1/2	3.25

He calls attention to this Stone as equal to Washita, and refers to the fact that it has been in use for the past 20 years. In consideration of reduced freight rates and the Stone being quarried in large blocks, avoiding waste, it is stated that the price

from the East latterly offset the effect of heavy consumption in a great measure, and outside speculative interest is momentarily on a rather small scale.

Copper warrants had improved about 15/ during the week. A good business has been done, and that, together with the favorable statistical position, imparts a more confident feeling. Deliveries are still heavy, so large, in fact, as to offset the heavy arrivals from America to the surprise, not only of the trade, but outside operators. It is believed that there is a large "short" interest, as outsiders have been rather free sellers of late and very timid buyers. Holdings of cash warrants at present are chiefly in strong hands. The offering of American Copper and Furnace Material at present is on a smaller scale than for some time past.

The Tin-Plate market has been quiet and prices are still tending in buyers' favor. Sellers manifest more anxiety as old contracts are fulfilled. The current output of most mills is, however, largely taken up on old orders, and the concessions made are chiefly on future deliveries.

Steel Ship Plates are rather weaker, with £6. 5/ freely quoted by makers. The demand continues slow.

Scotch Pig Iron.—Prices for makers' brands are still unsettled, but gradually getting to a normal basis. The demand has not improved.

No. 1 Coltness, f.o.b. Glasgow	65/
No. 1 Summerlee, " "	61/6
No. 1 Gartsherrie, " "	61/
No. 1 Langloan, " "	59/
No. 1 Carnaroe, " "	49/
No. 1 Shotta, " at Leith	50/
No. 1 Glesgarnock, " Ardrossan	50/
No. 1 Dalmellington, " "	50/
No. 1 Eglinton, " "	51/

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

Cleveland Pig.—The market remains very quiet and prices are unsettled, with the tendency in seller's favor. Makers quote at 39/6 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Lower prices for warrants have still a depressing influence, there being no improvement in the demand. Makers quote 51/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—Makers are offering at 2/6 decline, but the movement is light and the demand moderate. English 20¢ quoted at 95/, f.o.b. shipping port.

Steel Rails.—Orders come forward slowly, and the moderate business passing is at old prices. Heavy sections quoted £4. 12/6, and light sections £5. 5/ @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Sellers have made some concession on prices, but business is moderate. Sellers at £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—The market remains quiet and prices are without change. Bessemer, 2½ x 2½ inches, quoted at £4. 10/, f.o.b. at N. W. England shipping point.

Steel Slabs.—No change whatever in this line. The demand continues light. Bessemer quoted at £4. 10/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Very little doing.

More inquiry noted, but buyers' views much too low. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—The demand continues light, and prices are without change. Heavy Wrought quoted at £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—Dealings moderate and values rather in buyers' favor. Bessemer quoted at £2. 17/6 @ £3, f.o.b.

Tin Plate.—Demand is light. Sellers offer more freely, and prices are unsettled and irregular. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	19/ @ 19/3
IC Bessemer Steel, Coke finish	17/9 @ 18/3
IC Siemens	18/ @ 18/6
IC Coke, B. V. grade	17/6 @ 17/9
Charcoal Ternie, Dean grade	17/3 @ 17/6

Manufactured Iron.—There is no life to business in this line, and prices are without change. We quote, f.o.b. Liverpool:

Staff, Marked Bars	8 10 0 @ 8 15 0
Common	6 10 0
Staff, Bl'k Sheet, singles	6 17
Welsh Bars (f.o.b. Wales)	5 17 6 @ 6 0 0

Tin.—The market is fairly active, but prices show little variation. Straits quoted at £90. 5/, spot, and £90. 10/ for three months' futures.

Copper.—Demand continues quite brisk, and prices are firm. Merchant Bars quoted at £52. 17/6, spot, and £52. 17/6, three months' futures. Best Selected, £57.

Lead.—More business doing, and the market firmer at £12. 15/ for Soft Spanish.

Spelter.—The movement has been light, and prices are weaker at £22. 17/6 for Ordinary Silesian.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Last week it was noted that the general distribution of Paints, Colors and Oils was rather larger than during the week preceding. The past week has witnessed a further improvement in the trade in both departments, and at present there is little, if any, cause for complaint. As a matter of fact, the spring season trade is, at present, gratifying to the most sanguine expectations, being of good proportions, yet free from speculative influence or artificial stimulus. Doubtless the sharp advance that has taken place in the price of lard and the consequent improvement in values of cheaper greases has more or less bearing upon the market for nearly all lubricants; but enlarged demand from home trade buyers and improvement in export demand for several lines of Oils is not without effect. In point of fact, the Oil market, with few exceptions, has not shown as good form at any previous time this year as it does at present. The movement in values of Paints and Colors has not been as general or as pronounced as in the Oil trade, but the tendency nearly all along the line has afforded sellers no little satisfaction, and present indications point to improvement rather than any downward movement of prices, and the prospects are unmistakably better for a more liberal general distribution.

Paints and Colors.

White Lead.—Orders have been more numerous for both corrodors' product and

the cheaper lines of pigment, and the distribution, to all accounts, is in flattering contrast with that of the preceding week. In other words, it would appear that the spring season movement is now well under headway and of sufficient volume to compensate in a good measure for the dullness experienced early in the month. No changes in prices have taken place, but the condition of the market for crude materials favors higher values, and the rumor has circulation that the Lead trust officials contemplate making an advance in their list within the next 30 days, and that cheaper varieties would be marked up should pure pigment be advanced, is considered as being very probable.

Red Lead and Litharge.—No change in the manufacturers' list prices has been made, and, aside from the improvement in sales due at this time, there is nothing special to remark as regards the movement of supplies. Speaking in a general way, the distribution may fairly be said to afford satisfaction to sellers.

Zincs.—Except that jobbers have experienced a rather freer movement, there is nothing new to report on either Domestic or Foreign Oxide. Home manufacturers enjoy a very fair demand, in addition to the liberal movement of stock on back orders, and foreign brands are moving off in a satisfactory manner. Values are without change, but very firm, and the condition of the market for Ores is anything but indicative of movement in buyers' favor in the immediate future.

Colors.—In prices of Dry Colors there have been no important changes the past week, and the market as a whole shows steadiness. The only irregularity worthy of note is on Quicksilver Vermilion, an "outside" brand of which is selling at 2¢ @ 3¢ under the combination schedule. Business in both Dry and Oil Colors and ready-mixed Paints has undergone further improvement, and purchases for immediate delivery and for shipment ahead are now quite in line with what is customary at this season of the year.

Miscellaneous.—There is still a scarcity of Block Chalk, and bids of as high as \$3 are said to have been made for round lots now afloat. Whiting and Paris White, while quoted no higher, are very firm, with a fairly active business passing. The arrivals of foreign China Clay and Talc are closely taken up at full former prices, and domestic brands remain very firm also under the influence of free demand. Terra Alba is finding quite liberal sale at full prices. The demand for Barytes keeps up well and the market is very firm.

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HARDWARE.

Condition of Trade.

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Notes on Prices.

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Penknife Pieces, 3 1/2 to 5 inches long.....	.24
High Rounds.....	.20

Mounted in Polished Cases.

	Per dozen.		Per dozen.
3 1/2 x 1.....	\$1.75	6 x 2.....	\$2.75
4 x 1 1/2.....	2.00	7 x 2.....	3.00
5 x 2.....	2.50	8 x 2.....	3.25

He calls attention to this Stone as equal to Washita, and refers to the fact that it has been in use for the past 20 years. In consideration of reduced freight rates and the Stone being quarried in large blocks, avoiding waste, it is stated that the price

is much lower than heretofore. It is packed the same as Washita, and neatly labeled as represented in the circular.

Glass.—There is little of interest to report in the Glass market, as the demand still remains small, and price unsatisfactory. Glass jobbers complain that they are not doing as much business as they did last spring. Glass is quoted in small lots at 80 and 10 per cent. discount, and in carload lots from 80 and 20 to 85 per cent. discount. Prices on car lots from factory depend largely upon the assortment and upon the amount of orders on hand. In some cases an order at 80 per cent. discount would be refused by a manufacturer, while in others a slight concession might be obtained from this figure.

Miscellaneous.—Enterprise Mfg. Company, Philadelphia, announce, under date March 13, that the list price of their Enterprise Cherry Stoner, No. 1, has been advanced from \$6 to \$7.50 per dozen, subject to the same discount as heretofore.

Glass Board and Rules.—The following new list of the Perfection Glass Board and Glaziers' Rules, manufactured by the Lufkin Rule Company, Cleveland, Ohio, for whom the S. A. Haines Company, 90 Chambers street, New York, are agents, has been issued. It is subject to a discount of 15 per cent.:

Perfection Glass Board.	
Size of Board.	Each.
24 x 36.....	\$10.00
30 x 48.....	11.00
36 x 54.....	12.50
42 x 60.....	14.00
48 x 72.....	16.00

Glaziers' Rules.	
Made of hard wood with brass ends.	
No.	Per doz.
No. 100, 36 inches long, 1 1/4 x 1/4.....	\$15.00
No. 101, 48 " " " 1 1/4 x 1/4.....	21.00
No. 102, 60 " " " 2 1/4 x 1/4.....	27.00
No. 103, 72 " " " 2 1/4 x 1/4.....	33.00
No. 104, 84 " " " 2 1/4 x 1/4.....	42.00
No. 105, 96 " " " 3 x 1/4.....	51.00
No. 106, 108 " " " 3 x 1/4.....	60.00
No. 107, 120 " " " 3 1/4 x 1/4.....	69.00
No. 108, 144 " " " 3 1/4 x 1/4.....	90.00

Carriage Hardware.—Strieby & Foot, Newark, N. J., have issued their discount sheet No. 15 1/2, giving prices on the large line of Carriage and Wagon Hardware of which they are manufacturers.

The Geo. Worthington Co.

THE EXTENT of the business done by the Geo. Worthington Company, Cleveland, Ohio, is indicated in a measure by the number and variety of goods shown in their several catalogues, which are of uniform size, 9 1/4 x 12 inches. Their Pipe catalogue of 44 pages contains Pipe, Fittings, Tools and Valves. Steam Engines, Boilers and Pumps are shown in a 32 page pamphlet. Engines and Boiler Trimmings, Brass Goods, &c., in one of 44 pages. The catalogue showing Guns, Rifles, Ammunition, Fishing Tackle, &c. contains 106 pages. A Wheel catalogue of 16 pages contains Bicycles, Tricycles, Velocipedes, Toy Wagons, &c. Their Machinist and Tool catalogue of 588 pages is bound in cloth and leather. They have in course of preparation a catalogue of 1650 pages, illustrating their stock, with the exception of Carriages and Saddlery, which will be represented in a separate catalogue of 250 pages. All of these catalogues are printed on good paper, and indicate much care and thought in their arrangement.

CYCLES.

THE TRADE in Bicycles, Safeties, Tricycles, &c., is constantly assuming increased importance, and during the present year a larger variety of machines is put on the market than ever before. In these machines some new features and many improvements are embodied. The Hardware trade are handling these goods to an increased extent, as they work in advantageously with the regular lines. It will be well for merchants who are not now selling Cycles to consider the feasibility of their doing so. There are probably many places where a departure in this direction would be profitable.

We give below a partial view of the market in this line, intending to continue the exhibit in our next issue.

WILLIAM READ & SONS, Boston, will have on the market for the 1891 season the

New Mail Safety

in different styles. They will have their New Mail as last year, which was illustrated in *The Iron Age*, March 27, 1890, but with the addition of cushion tires and Garford saddle. This New Mail has for its specialties the Trigwell ball head, also rear axle band brake, which is referred to as not injuring the tire and as especially favorable for cushion tires. It also has the spring fork, and the wheel is described as made of the best Credenda tubing throughout. The manufacturers will introduce a new pattern New Mail to meet the demand for a good medium-priced wheel, with cushioned tires, tangent spokes and Garford saddle. It is stated that the cushion tires on this wheel annul all jar as well as a spring fork would do. A ladies' pattern New Mail will also be brought out with cushion tires, and it is intimated that the machine will be exceptionally handsome.

MERWIN, HULBERT & Co., New York, are cataloguing a very complete line of Bicycles for the season of 1891, with prices ranging from \$35 to \$160, comprising machines for boys, girls, ladies and gentlemen. Their

*Dandy,
King of Road,
Pathfinder,*

will be the same as last year, excepting some minor improvements. They are bringing out this season a new line of wheels similar in pattern to the above, christened the

*Lighting,
Rapid Transit,
Greyhound.*

The Lighting is 24 inches, Rapid Transit 27 inches and Greyhound 30 inches. The difference between these and those named above is that these have tangent spokes and ball bearings throughout. These machines are especially constructed to withstand the heavy and hard usage of boys, although the 30 inch is suitable for a full-grown person, and is guaranteed to carry 200 pounds if necessary.

They are also producing a line of wheels which are known as Outings. These machines, Nos. 1, 2 and 3, are referred to as built from the best of weldless steel tubing, having ball bearings at all points. These wheels they confidently place on the market as being of first quality in every respect. The sizes of these three numbers range 26, 28 and 30 inches, and are fitted with cushion or solid tires. In addition to these lines, which are their own special manufacture, they are the New York State agents for the Swift

Bicycles, manufactured by the Coventry Machinist Company, Coventry, England. This line of wheels they will be able to supply with solid cushion or pneumatic tires. The frames of these machines except the ladies' are of the diamond pattern, ranging in weight from 36 to 50 pounds.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, will offer to the trade for 1891 the following machines:

*New Mail (Nos. 1, 2 and 3).
Courier.
Chicago.
Gypsy.
Tornado.
Cricket.
Wanderer.
Little Jewel.
New Lever Tricycle.
Fast Mail Iron Velocipede.*

This line of machines gives a range in Bicycles from the high grade to a Safety, with 20-inch wheels, designed for boys and girls, the prices of each conforming to the grade of the machine. The New Lever Tricycle is designed with especial reference to simplicity and lightness. The Fast Mail Velocipede ranges in size from 16 to 28 inch front wheel, and has forged steel front axle, curved handle bar, improved leather saddle and rear reach of wrought iron.

HORTON, GILMORE, McWILLIAMS & Co., Chicago, discard this season the whole of their old line, and handle for 1891 almost exclusively the

*Cyclone.
Coventry Rival Tandem.*

The Cyclone line will include eleven styles, which are designated by numbers from 1 to 11 inclusive. Nos. 2, 6 and 8 are ladies' convertible wheels, while the other numbers vary in rims, bearings, finish, &c. Nos. 1, 2, 3 and 4 will be fitted with the Eureka anti-vibrators without extra charge, and Nos. 8, 9, 10 and 11 will be fitted with high-grade imported lamps at no charge. Nos. 1 and 3 are fitted with a rear brake, which is highly spoken of. The chain adjustment on Nos. 2, 4, 5, 6 and 7 is referred to as one of exceptional merit, loosening both nuts of the rear wheels, the chain is tightened by means of two little screws, and always in line. The entire line of Cyclones is referred to as having desirable ball-bearing adjustments, and it is claimed that when once adjusted cannot be budged the smallest fraction of an inch. The Coventry Rival Tandem has cushion tires and socket ball-bearing head.

JOHN P. LOVELL ARMS COMPANY, Boston, will have on the market for the coming season the following Safeties:

*Diamond.
Lovell Premium.
Lovell Boy's and Girl's Safety.*

The Lovell High Grade Diamond Safety, which was placed on the market the first of last season, an illustration of which appeared in the *Iron Age* of March 27, 1890, has now passed through its first season of use, and the manufacturers refer to the satisfaction it has given. Last year the makers were unable to meet the demand, but they have no doubt that this season they will be able to fill all orders as they are received, having made arrangements to turn out three times the quantity that they did last season. The Lovell Premium Safety, which was produced the latter part of last season, will be manufactured in ball as well as cone bearings. The Lovell Boy's and Girl's Safety, which was also on the market last season, will be manufactured this coming year in ball

as well as cone bearings. This machine has 26-inch wheels and is suitable for either boys' or girls' use. The manufacturers state that any of the Bicycles turned out by them will be found to be complete in all details, and first class in every respect, and fully warranted.

GORMULLY & JEFFERY MFG. COMPANY, Chicago, Ill., in their 1891 catalogue show the following machines:

American Light Rambler.
American Rambler.
American Cushioned Rambler.
American Ladies' Rambler.
American Ideal Rambler.
American Light Champion.
American Champion.
American Challenge Tricycle.
American Challenge Tandem.
American Ideal Tricycle.

These machines are sold only by agents and not to the jobbing trade. The manufacturers prefer that responsible dealers in every town should handle their goods. The American Cushioned Rambler and the Ladies' Rambler are presented this season for the first time. The Light Rambler has a spring frame, steering head which turns on a series of balls at both ends, handle bar of one piece of $\frac{1}{4}$ -inch seamless steel tubing, reinforced by a supplementary tube inside, front wheel brake, ball bearings, tangent spokes and solid tires. When this machine is ordered for ladies' use it is furnished with the Rambler saddle of reduced length and with dress guards instead of brace. The Rambler embodies all of the salient features of the Light Rambler, but the front and rear forks of this machine are one gauge heavier, the tires are $\frac{1}{4}$ -inch thicker, the saddle post is solid instead of hollow, the rims of the wheels are semi-hollow and direct butt-ended spokes are used. The Cushioned Rambler is substantially the same as the Light Rambler, except that it has cushioned tires. The Ladies' Rambler is a lighter wheel than the Ladies' Light Rambler, but in other respects has all the essential features of the Light Rambler. The Ideal Rambler is made for both boys and girls, and follows closely the model of the larger Ramblers. The Light Champion and Champion machines are made with the front wheels from 48 to 60 inches in diameter. The driving wheels of the Tricycles are made from 30 to 60 inches.

THE EAGLE BICYCLE MFG. COMPANY, Stamford, Conn., have for the season of 1891 their

Eagle Roadster.
Eagle Light Roadster.
Boys' Eagle.
Eagle Racer.

The last three of these Bicycles are entirely new machines this year. The Eagle Roadster has stood the test of two seasons, and will have no change made in its construction. The Eagle Light Roadster is of lighter weight than their regular Roadster. It has, however, tangent spokes and hollow rims. Both wheels have ball bearings all around. The Boy's Eagle is an Eagle Bicycle made expressly for boys. This machine, the manufacturers state, is well made in every respect and will prove strong and durable. It is built on the exact lines of the high-grade Eagles, and all the metal-wearing parts are made of steel. The weight of the Eagle Racer, 52-inch, is 23 pounds. The increasing popularity of the Eagle and its adoption by so many fast riders is referred to by the manufacturers as the reason for providing a wheel suitable for track work. They will carry a few of these machines of the principal sizes in stock, and be prepared to furnish others to order at short notice.

OVERMAN WHEEL COMPANY, Boston, are making for the season of 1891 the following safeties:

Victor.
Credenda.
Nonpareil.

The Victor Cycles are made in five styles of highest grade Safety Bicycles. Part of these will have plain, rigid front forks, and Victor cushion tires to both wheels, and the remainder will have the regular Victor spring fork, which is referred to as having been one of their characteristic and most successful features ever since the first American Rover type Safety, the Victor of '87, was built. They refer particularly to their cushion tire, which they guarantee in every respect. The Credenda is made in both ladies' and gentlemen's Safeties, with cushion tires, &c. The Nonpareil is made in two styles, one a 26-inch Boys' Safety, the other one the same, with the addition of ball bearings. The manufacturers mention the fact that one of the best features of their line of nine machines is its diversity, the purchasers being almost sure to find what they want. They have augmented their facilities for production by the addition to their works of a new building 50 x 200 feet, six stories, and two smaller buildings, making new flooring about 70,000 square feet. They have houses of their own in Boston, Washington, Denver, San Francisco, and A. G. Spalding & Bros. of New York, Chicago and Philadelphia are their special agents.

Trade Items.

PLANET MILLS, 83 Leonard street, New York, manufacturers of Patent Silver Binder Twine, under the title of Proofs, give information to the trade regarding their Binder Twine. This pamphlet contains a portion of a large number of endorsements, received from dealers since June, 1890, who have handled their Twine. The manufacturers claim for Patent Silver Twine, better length and strength than Sisal, New Zealand or American Hemp; more uniform strength and size than mixed, Manila or Russia Hemp Twine; full 500 feet or more to the pound; freedom from bunches of tow and irregularities; that it is mildew and insect proof; ample tensile strength; excellent balling and baling; and that it is cheap and has exceptional selling points.

EHRET-WARREN MFG. COMPANY, St. Louis, Mo., manufacturers of Black Diamond Roofing, Building Papers, &c., are sending with their compliments a very neat card case. This is made of dark seal grained leather with two card receptacles, and lined with leather of a lighter color.

G. T. MOORE, 112 Chambers street, New York, has sold the Victoria Lawn Mower for the past two years. Two carloads of them have been received this season from the factory in Indiana. As an advertisement the cars were covered on both sides with canvas, on which was printed "This car contains Victoria Lawn Mowers for G. T. Moore, 112 Chambers street, New York." The cars attracted considerable attention, as he has received a quantity of press notices from towns along the route.

THE REACTION from large catalogues is noticeable in a convenient pocket edition sent out by the Norwich Lock Mfg. Company, Norwich, Conn. It contains a large amount of matter, illustrated with cuts one-third size. The manufacturers state that the articles described in this book are leading goods, selected from the large variety they manufacture, and consumers can buy them of good Hardware houses in all parts of the country. This pocket catalogue is referred to as being a new departure in the Lock and Hardware line,

which they are ready to furnish in liberal quantities to those who buy goods of them. Any salesman who handles these goods can obtain a copy of this pocket catalogue, bound in leather, with his name on the outside in gilt letters, by sending the manufacturers his address and the name of the firm that he is with. A price-list on a separate sheet accompanies this convenient little catalogue.

THE KINGS COUNTY IRON FOUNDRY, 86 to 92 North Twelfth street, Brooklyn, N. Y., are manufacturing a line of Sash Weights, solid grooved eye. They issue a list of standard sizes, running in weight from 2 pounds to 30 pounds, and giving the diameter and length. They are also prepared to furnish larger sizes from stock or to order. Elevator and Dumb Waiter Weights, Hitching Weights, Ballast for Boats, Castings and Lead Sash Weights are also made by them.

THE NEW YORK OFFICE of the Bronson Supply Company, and also of the Avery Stamping Company, has been removed from 51 Cliff street to 72 Beekman street.

WM. SHIMER, SON & Co., Freemansburg, Pa., advise us that their agents in Chicago are the Cline Mfg. Company, 67 West Washington street, who carry a full line of samples and catalogues of their goods. They also state that these are their only authorized representatives in that city.

IN OUR LAST ISSUE we referred to the report that Samuel O. Eddy, Frenchtown, N. J., had taken his son, Geo. W. Eddy, into partnership with him in his Hardware business. This statement was erroneous, the names of the principals having been transposed. The fact is, as our readers will apprehend, that Geo. W. Eddy has taken his son into business with him, the firm name becoming Geo. W. Eddy & Son.

A. E. LLOYD & Co., Durham, N. C., request us to state that their agents should be glad to receive catalogues of Agricultural Machinery and Implements from the manufacturers of these goods.

H. M. & C. L. MUNGER, 142 Lake street, Chicago, have just issued a neat and comprehensive circular illustrating the line of Hog Jewelry for which they are general agents. It includes Hill's Pattern Hog Rings and Ringers, Brown's Perfect Hog Rings, Ringers and Stock Marks and Hurd's American Hog Tamers. They will be pleased to furnish these circulars to the jobbing trade for the use of their travelers when requested.

WE UNDERSTAND that the necessary steps are being taken looking to the organization of the firm of Brittan, Graham & Mathes, Pittsburgh, Pa., manufacturers of Builders' Hardware, into a stock concern. It is proposed to put \$100,000 additional capital into the new company and to materially increase the present line of goods.

THE BRANSFORD HARDWARE COMPANY, Nashville, Tenn., have taken possession of their new building, which has been in course of erection for some months past. The structure represents an expenditure of about \$150,000. The company have thus secured an establishment embodying the latest and most approved methods of arrangement and affording them largely increased facilities for the accommodation of their rapidly growing business.

IN HIS ADVERTISEMENT in this issue, on the first page of cover, A. J. Jordan, St. Louis, Mo., calls attention to a line of metal handle Knives which he is offering as of unusually good quality. We are advised that the firm are in frequent receipt of letters in which the high quality of their AAA1 goods is referred to.

NELSON B. WILLIAMS, Chicago, manufacturers' agent and warehouseman for Iron and Steel products, is sending out, under date of March 1, 1891, a very interesting folder relating to these goods. A Galvanized Sheet Iron table is given, showing gauges with weight per square foot and per 100 square feet, list price per pound, cost per square foot at list, together with cost per pound and per square foot at different discounts, ranging from 50 per cent. to 70 per cent. In this table prices are calculated to three places of decimals which is considered sufficiently accurate for all practical purposes. There are also tables giving the square feet in each of the regular-sized sheets of special Soft Steel. The weight per square foot of the various numbers of Black Sheets rolled to Birmingham gauge, the standard and extreme sizes of best Bloom Galvanized Iron, &c. The folder is on cardboard convenient in size, and the arrangement of matter is very complete. The line handled includes Galvanized Sheet Iron, Siemens-Martin and Bessemer Steel Sheets, Refined and Common Sheet Iron, Flange, Tank and Smoke Stack Iron or Steel Sheets and Corrugated Roofing Iron, Galvanized or Painted.

IN A RECENT ISSUE of the *Wheel* attention was called to the excellent management under which the agents of the Pope Mfg. Company worked, and the oneness of purpose which actuated this large cycling force of which Colonel Pope is the head. It was remarked that one could talk to a Columbia agent in far-away Wisconsin, chat with one down in Florida, or compare notes with a Massachusetts seller of Columbias, and they all show the same training, using the same Columbia arguments and following the same plan of campaign.

HAYDOCK & BISSELL, 12 Murray street and 15 Park place, New York, in their Special Notice on another page call attention to a large special and peremptory sale of Granite Ironware seconds by order of the St. Louis Stamping Company. The sale is announced to take place on Wednesday and Thursday, April 8 and 9, and will be without reserve.

A SMALL FOLDER relating to precious gems is issued by the S. A. Haines Company, 90 Chambers street, New York. It is about 3½ inches square, and opens, one page to the left and another to the right. These give a list of precious jewels, by whom owned and the value of each. Upon the inside of the left page is a cut of the Koh-i-noor, and upon the opposite page is one of the Orlov, two of the famous diamonds of the world, with a description accompanying each cut. On the leaf between the two we find instructions to lift this leaf and a diamond of utility will be seen. This reveals a picture of the Diamond Lawn Mower, "owned by Dille & McGuire Mfg. Company, Richmond, Ind.," which is referred to as the brightest jewel of them all. The folder is neat in appearance, unique in arrangement, and will doubtless attract the attention intended as an advertising medium.

Trade Topics.

IT IS A WELL-KNOWN FACT that jobbing houses, the great distributor of goods, very often sell staple lines at very close prices which afford them very little profit and have at the same time a tendency to force their competitors to sell at equally low figures. If this practice were confined to a few well-known lines of goods the mischief would not be so serious, but the fact that it extends in many directions and affects lead-

ing goods in almost every important line makes the evil a serious one. Referring to this practice, we have the following letter from a prominent manufacturer, in which reference is made to the feasibility of manufacturers, the prices of whose goods are thus cut, establishing a schedule of prices, with a view to assisting jobbers to sell at profitable figures:

Permit us to suggest that an interesting topic for discussion in the columns of your paper would be, Whether or not it would be feasible for manufacturers of certain goods to adopt a schedule of prices and rebates that would enable jobbers to sell the goods at a fair margin? As you are, of course, aware, there is very great complaint among all jobbers that margins are too close. Manufacturers would, of course, much prefer to have their jobbing customers make a fair profit, but the question is, What is the way to bring it about? Of course, certain leading goods for a number of years past have been sold on the rebate principle, with the proviso that jobbers keep the price, but it is generally claimed that stipulated price for jobbers to sell at is only kept in form and not in spirit.

The question is one of recognized difficulty, and we shall be glad to hear from any in the trade, whether manufacturers or jobbers, in regard to a remedy.

Price-Lists, Circulars, &c.

SHEPARD HARDWARE COMPANY, Buffalo, N. Y.: Export Catalogue No. 35, for Export Trade, relates to Ice Cream Freezers, Fruit, Jelly and Lard Presses, Toy Cap Pistols, Mechanical Toys, small Iron Toys, Tinnery Stoves, Queen City Boiler, Gate Hinges and Latches, Spring Hinges, Blind Hinges, Frame Pulleys, &c. There are shown several new styles of Toy Cap Pistols, Excelsior Iron Toys and Niagara Spring Hinge. Also a table for converting American currency into English money.

RICHARDSON BROS., Newark, N. J.: Saws, Circular Saws, Mandrels, Cross-cut Saws, Hand Panel and Rip Saws, Back and Compass Saws, Miter Boxes, Meat Saws, Turning Webs, Band Saws, Wood Saws, &c. Their 1891 catalogue of 73 pages contains a revised price-list and discount sheet. Several changes in lists are noticed, especially in Mill goods, some of these lists having been considerably advanced. The lists on Turning Webs, Felloe Webs, Band Saws, Webs for foot-power machines, Mulay Scroll Saws, &c., are particularly complete, while the lists as a whole are compact and plain. They state that since the issue of their last catalogue they have greatly increased their facilities by the introduction of machinery especially designed for manufacturing goods in their line.

THE BARTHOLOMEW COMPANY, Cincinnati, Ohio: The Bartholomew Short-turn Wagon. The point is made that it is simple in construction. The Swivel-bar—which swivels under the body in unity with axle—the sleeve or socket in which the king-bolt rests, and the steel brace which is designed to sustain all wrench or strain, are referred to as forming, together with an exceptionally stout king-bolt, a most unique device.

R. R. ROUSE, Indianapolis, Ind.: The Lightning Pipe Vise, Try Me Pipe Bolt and Nut Wrench, Three in a Row Power Pump, Sectional Open-Ended Well Point, Improved Driving Block and Household Treasure Ice Pick.

E. C. ATKINS & Co., Indianapolis, Ind.: Saws and Saw Tools Circular, Band, Cross-cut and Wood Saws; Saw Makers' Tools, Saw Tools, Gummers, Automatic Sharpeners, Belt Fasteners, Pulleys, Packing, &c. The registered trade-marks

on their Cross-cut Saws are Silver Steel, Dexter, Effigy of a Horse, Diamond, Effigy of a Diamond, Segment Ground, Rex, Victor Lance and Diamond Point. Their 1891 catalogue of 167 pages contains tables and much useful information, in addition to illustrations and price-lists.

THE BILLINGS & SPENCER COMPANY, Hartford, Conn.: Billings Screw Plates, Wrenches, Carbon Tongs, Double-Acting Ratchet Drills, Steel Clamps, Thread Cutting and Diamond Point Lathe Tool, Screwdrivers, Scratch Gauge, Machinist's Hammers, Drop-forged Machine Wrenches, Special Drop-forgings of Iron and Steel, &c.

STANDARD STAMPING COMPANY, St. Louis, Mo.: Stamped, Pieced and Japanned Tinware, importers and jobbers of Tin Plate, Tinnery Supplies, Machines and Tools.

WARREN FEATHERBONE WHIP COMPANY, Three Oaks, Mich.: Featherbone Whips. Featherbone is a Bone of commerce made from Quills. The manufacturers claim that though it is much cheaper than it possesses more of the characteristics of Whalebone than any substance ever used in Whips. It is stated that these goods find a market in every State in the Union.

THE VANDERGRIFT MFG. COMPANY, Jamestown, N. Y.: Self-Weighing Shot-Case, New Improved Western Washer, Round Washing Machines and American Hand Seed Planter. This company have just moved into a large new addition lately added to their factory, which doubles their capacity.

GEO. K. OYLER & COMPANY, St. Louis, Mo.: Vehicles, Harness, Cane Machinery, Plow Colters, Blades and Hubs. These wholesale net prices, for dealers only, under date of March 1, 1891, are arranged in different pamphlets properly classified.

ROCKWELL & SAYRE MFG. COMPANY, Horseheads, N. Y.: Screen Doors and Windows. The Perfection Screen Door is described as having moldings on both sides, thus making a complete finish inside as well as outside. It has an extra ½ inch on both length and width of frame to allow for fitting, with mortised and glued corners. The Doors are covered with green, black or decorated Screen Wire, as desired. The Window Screens are made 20 x 34 inches and 24 x 36 inches, and covered with the same varieties of cloth as the Doors.

TROTTER REFRIGERATOR COMPANY, Newark and Rochester, N. Y.: Refrigerators, Ice Chests, Side Boards, Grocers' Chests, Cream and Oyster Coolers, large Refrigerators for hotels and restaurants, Refrigerator Show Cases for restaurant windows, cold storage rooms, &c. The Trotter Refrigerators are described as being made of only hard wood, nicely paneled. The inside of the provision chamber is lined with selected white-wood, covered with two coats of pure shellac cut in alcohol. The ice chamber is lined with galvanized iron. The filler used is a compound of resin, melted and poured into the sections of the box before the outer casing is put on. It is claimed that this compound fills every crack and crevice and penetrates all the pores of the wood, after which it hardens. The outside finish is either antique or natural color. Attention is directed to the construction of the flues, which extend entirely across the ice chamber—in front and back—instead of across the ends. The claim is made that this system insures a rapid circulation of air, and secures an even distribution of the air currents in all parts of the food chamber.

WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn.: Repeating Fire Arms and Metallic Ammunition, Paper and Brass Shot Shells, Primers, Gun Wads, Reloading Tools, &c., Winchester Rifles, Single-Shot Rifles, Rifled Muskets, Carbines, Hunting and Target Rifles, Repeating Shot Guns, Hotchkiss Magazine Fire Arms for military and sporting use, and

Metallic Cartridges of all kinds. Their March, 1891, catalogue contains 85 pages, fully illustrated, and is replete with information concerning the goods therein shown. The back page of the cover gives a cut of their new Repeating Rifle, 22 caliber, model 1890.

A. F. SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo.: Spring catalogue, February, 1891. This contains 37 pages and is devoted to Clippers, Cutlery, Sheep Shears, Refrigerators, Barrows, Lawn Mowers, Stoves, Screen Doors and Windows, Chain Pumps, Eye Hoes, Baby Carriages, Fishing Tackle and other spring goods. The first page shows a perspective view of their new building, Washington avenue and Fourth. In referring to their removal they state that their space is about doubled, and their facilities for handling their trade are increased by their enlarged quarters and by the many conveniences of the new building fully 100 per cent. They intend to devote more attention than ever before to their mail orders, pledging themselves to fill orders sent them promptly, with standard goods, at the lowest price. They will issue this year a new and very complete illustrated catalogue of over 1000 pages. Conveniently arranged Screw and Bolt lists for use in retail stores accompany the catalogue.

THE WILLER MFG. COMPANY, Milwaukee, Wis.: The Willer Sliding Window Screens and Screen Doors. The outside and inside Sliding Window Screens have the molding which holds in the screen wire flush with the face of the frame, and slide up and down on small strips secured to the window frame. Doors are specially made to order of the exact size and style ordered and are intended for the best class of buildings. These are made in many styles, or will be made according to special design furnished by architects and others.

E. W. WALKER & Co., Goshen, Ind.: Wood Pumps, Pump Curbs, Hand Carts, Wheelbarrows, Well-Drilling Machinery. A small pamphlet tastefully bound in colored paper covers, with illustrations of the above mentioned goods.

CASE & UEHREN, Aurora, Ill., issue a pamphlet relating to Bicycles and Bicycle Sundries. The machines represented in it are the New Mail, Courier, the Chicago, Gypsy, Tornado, Cricket, Wanderer and Little Jewel Safeties; New Lever Tricycle and Fast Mail Iron Velocipede. The catalogue is attractively printed, illustrated in colored inks, and in addition to the wheels, shows an extensive line of Bicycle Sundries.

R. E. DIETZ COMPANY, New York and Chicago: Net price-list No. 25, 1891. The catalogue is printed on calendered paper, and is neat and attractive in appearance. It is devoted to Tubular Lamps, Lanterns, Globes, Burners, Oil Pots or Founts, Oil Stoves, &c. Blank pages are left for Memorandum, which are followed by an index. A separate sheet illustrates their No. 6 Best Lift Wire Tubular Lantern with round stamped tubes, which they discontinued making about a year ago, but having had calls for it, have decided to carry in stock in the future. Dietz Square Lift Tubular Lantern with new patent guard is shown on the last page of the catalogue's cover.

THE ANSONIA BRASS AND COPPER COMPANY, 19 and 21 Cliff street, New York: Sole manufacturers of Tobin Bronze. Pamphlet No. 166 contains a treatise on this Metal, with instructions for ordering and using it. A table of weight in sheets and rods; results of tests of its tensile strength, elasticity, &c., and testimonials from manufacturers and others who are using Tobin Bronze. The Metal is furnished in form for Ship Sheathing and Fastening, Pump Rods and Yacht Shafting, Sheets and Plates for Pump Linings, Condenser Heads, Tube Sheets, &c. Round, Square and Hexagon Bars. The manufacturers state that Tobin

Bronze, when rolled hot is remarkable for its high elastic limit, tensile strength, toughness and uniform texture, and is stronger than ordinary mild steel rods or plates; that at a dead red heat bolts and nuts can be forged from it, at a dark red heat it can be drop-forged in the same manner as steel, and that it is adapted for working in the lathe, being drawn into wire, being cold drawn, &c. An extension list is given of the uses for which it is suitable.

ST. JOSEPH PUMP COMPANY, St. Joseph, Mo.: Perfection Water Elevator and Purifying Pump, also Rubber Button Chain Pumps. It is claimed for the Perfection Pump, that it has no wooden tubing, no iron tubes, no rubber valves, no cylinder plungers, and that it does not have to be packed, primed or thawed out, also that it brings the fresh water from the bottom of the cistern or well first, thus insuring the coolest drink that can be drawn.

E. C. ATKINS & Co., Indianapolis, Ind.: Rex Segment Ground Cross-Cut Saw. The blade, by this process of grinding, is left on the tooth edge 14-gauge at ends and center and 16-gauge at both ends of the back edge, and 19-gauge at the center of the back edge. It is claimed that Saws so constructed do not require as much set to the teeth, all the teeth being of uniform thickness, each tooth does its share of the work; and the Saw being thinner in the center of the back, does not bind in the log. It is stated this Saw is well adapted for lumberman's use in the Northern woods where Saws are put to severe tests.

Salem Wire Nail Company.

THE SALEM WIRE NAIL COMPANY are now making 3000 kegs of Wire Nails daily in their mills at Salem and Findlay, Ohio. This is probably the largest product turned out by any Nail concern in the world, but large as it is the company propose to increase it to 3500 kegs. They have about concluded to build their long-talked-of Rod mill and will very shortly place the contract for its erection. Up to this time they have purchased their Rods wherever they could get them, often from their competitors in the Nail trade, but now they feel that they must control their raw material, as far as possible, because their product is becoming so large. They will aim to make their Rod mill the most complete of its kind, adopting the most improved appliances that can be found. It is their purpose to market their entire product of Rods in finished Nails. E. C. Brainard, Phenix Building, Chicago, is the general sales agent for the Northwest and George H. Ismon, 261 Broadway, New York, is general sales agent for the East.

Hermann Boker & Co.

ANNOUNCEMENT is made under date March 2 by Hermann Boker & Co., 101 and 103 Duane street, New York, that owing to the decease of their former partners, Herman Funke and Herman Funke, Jr., the interest of their respective estates in the firm has ceased from the above date, and that Carl F. Boker and Albert H. Funke have been admitted as partners with F. A. Boker, the surviving member of the old firm. It is also stated that W. M. Calhoun, manager of the Gun department, and C. H. Hawkins, manager of the Cutlery department, who have been connected with the firm for many years, will have an interest in the profits of the business. In this connection, in view of the prominent position held by the house and the changes which have taken place in its membership, many of our readers will be interested to know who the present members of the firm as reorganized are. F. A. Boker, the senior member of the present

firm, is the son of Hermann Boker, who in 1837 founded the business. Carl F. Boker is his younger brother, and has been doing a large business in Steel at 104 and 106 John street, in this city. His business will be merged into and carried on by Hermann Boker & Co., and will be known as the Steel department. Albert H. Funke is the son of the late senior partner, Herman Funke, who was so well and favorably known to the Hardware trade. The business will be continued as formerly at 101 and 103 Duane street, where the firm have been since 1870, having erected in the interval the large building running from Duane to Thomas street, so as to keep pace with their rapidly-extending business, which in its line is one of the largest and best known in the country.

Louisville.

FROM OUR SPECIAL correspondent in Louisville, Ky., we have the following advices in regard to trade in that center, under date, March 21:

During the past week the Hardware trade has done a good business, considering several drawbacks, principally the continued bad weather, effecting seriously farming operations and general business along the rivers. Heavy goods are going out in good demand, but the heavier shipments are on such staples as Barbed Wire and Cut Nails, the latter of which is freely used as a leader. There is an enormous natural increase of the use of Barbed Wire, and low prices enable consumers to utilize this economy. The question of fences is one of great moment to the agriculturist, and although Barbed Wire is condemned on account of its cruelty, yet it is the most economical barrier to take the place of the old rail fence. The Wire mills are very firm collectively, and it is hoped their compact may continue in force. It is remarkable just at this sharp advance in Wire that Wire Nails show such signs of weakness. They are nearly down to the lowest notch of six months ago. And yet the trade in them is growing more and more. The weak feeling from the mills prevents confidence in buyers, who would ordinarily purchase heavily, but are now buying only in carloads for immediate uses. The competition, as seen from a critical point, is very sharp between the Cut and Wire Nails, but there is probably room for both for years to come; the wholesale grocery trade are now carrying a double stock of Nails.

Bar Iron is very firm and in good demand. All mills promise prompt shipment, but very few have stock enough to fill an ordinary order. Agricultural factories and stores are still very busy, and Farm Machinery is moving in larger lots than ever. This market is becoming the distributing and storage point of many of the largest manufacturers in such machinery. The action of the Southern furnaces is watched with great interest. An era of low prices is prevailing; some furnaces, being satisfied with present status, are selling their product ahead; others, hoping for better times; but no concerted action is attempted for mutual betterment, each Iron master waiting for something to happen—some cause to build expectation on—but time goes and low prices remain. And yet these very Southern furnaces hold the key to the situation, in a measure. If they could advance prices, Bessemer Pig would be raised in price and that in turn would enhance the value of its products. There are a great many industries whose operators use as a guide the rise and fall of Pig Iron. General confidence would quickly be restored if Pig Metal could be brought up to its normal worth.

It Is Reported—

That H. A. Blanchard, dealer in Hardware at Portlandville, N. Y., has sold out his business to D. E. Packer.

That Hall & Co. will soon identify themselves with the Hardware business at Columbia, Pa.

That L. J. Walker & Co. is the title of a Hardware firm recently organized at Truro, N. S.

That J. G. McBride, dealer in Hardware, Tacoma, Wash., is closing out his business.

That Bozzard Bros. have succeeded Hood & Bozzard in the Hardware, Stove, and Implement business at East Stroudsburg, Pa.

That W. Filmar, Hardware dealer, Hagersville, Ont., has been succeeded by J. G. Pedlow.

That F. N. Gaskell has purchased the interest of his partner in the Hardware firm of Gaskell & Peck, Baraboo, Wis., and will continue the business under his own name.

That the firm of Hosie & Huntoon, dealers in Hardware at Franklin, Mass., have dissolved, the former retiring. The business will be continued by Mr. Huntoon.

That J. W. Smith, Hardware, La Crosse, Wis., is selling out his business.

That Hummel & Whittaker will open a new Hardware store at Chelsea, Mich.

That Hardy Bros., Hardware dealers at Hanley Falls, Minn., have sold out their Hardware department to T. H. Onstad.

That Albert Wilson, Hardware, Prairie Grove, Ark., has sold out his business to J. J. Baggett and J. W. McCormick.

That W. W. Lydston has opened a new Hardware store at Newburyport, Mass.

That C. L. Persing has succeeded Harwood & Persing, Hardware dealers, Kalamazoo, Mich., having absorbed his partner's interest.

That F. B. Tupper has sold his Hardware business at North Berwick, Maine, to Moses Young of South Berwick. Mr. Tupper will soon remove to Brunswick, Ga.

That Atwood and Shaw have commenced business at Waltham, Mass. The firm is composed of W. F. Atwood and B. M. Shaw, both of whom have been for several years connected with the Walker & Pratt Mfg. Company of Watertown, Mass. The new firm will carry a full line of Heating and Cooking Apparatus, Hardware, Cutlery, Tools, Paints and Oils, &c.

That Stuart and Morehouse have succeeded the Hardware, Stove and Implement firm of Stuart & Co., Chesaning, Mich.

That Stone & Fairbanks, W. Gardiner, Mass., have bought out the Stove and Tinware business of P. A. Riordan.

That Christian & Stiff have bought out the Stove and Tinware business of Robert Wallace, Hackettstown, N. J.

That Pitkins & Merrick have just opened a Hardware store at Bolton Landing, N. Y.

That William Keester has bought a half interest in the Hardware store of Frank Story at Kahoka, Mo.

That W. D. Allis has bought out the Hardware firm of Guy & Walter, Arcadia, Ind.

That W. M. Jungur, Hardware, has disposed of his business to Magunson and Henry Versick.

That Lytte & Eckles Hardware Company, Decatur, Ill., has been incorporated with a capital stock of \$20,000. The incorporators are R. P. Lytte, John P. Eckles and A. S. Robinson. The company will do a general Hardware business.

That P. F. McClure & Co., Pierre, S. D., dealers in Hardware, &c., have sold out to Smith & Rose.

That George Sash, Easton, N. Y., is moving his Hardware business to Johnsonville, N. Y.

That Johnson & Bretend, dealers in Hardware, Preston, Minn., have disposed of their business to Bushnell & King.

That Yost & Flemming will open a new Hardware store at Center Point, Iowa.

That J. D. Batelle of Waterbury has opened a Hardware store at Central Village, Conn.

That the Colfax Hardware Company have been incorporated at Colfax, Wash.

That Otis Wheaton intends to open a Hardware store at Sunbury, Ohio.

That H. O. Hanson & Co., Stephens, Minn., Hardware dealers, have sold out to Hanson & Kroke.

That W. W. Lydston has opened a branch Hardware store at Amesbury, Mass.

Reminiscences of the Old-Time Drummer.

BY J. H. C.

IN THE YEAR of '44 a North Carolina merchant, carrying a general stock, conceived the idea of importing a Yankee boy to assist in serving his customers, preferring the possible Northern push to the inertia found in a boy of his own section. In consequence the writer was transplanted from a Massachusetts school to a Southern State, where a residence of five years gave opportunity for the observations which are here referred to. It was the practice of most merchants outside of the few Southern cities of those days to make semi-annual purchasing trips to Baltimore, Philadelphia, New York, and sometimes to Boston. Consequently we had new goods but twice a year, and these came in an avalanche. There was a general and simultaneous participation in these trips by the dealers of a section, which gave them a flavor of pleasure excursions, and many stories were current of experiences in seeing the Northern Elephant. Naturally it devolved upon the salesmen of the places visited to do the honors of their cities, and cater to the amusement of the night as well as to the business wants of the day. To this end a previous acquaintance was desirable, for mistakes might arise from the lack of it, such as the possible invitation of a customer with conscientious scruples to a theater, with subsequent nocturnal bibulous visits. But such errors were never repeated, and were probably rare. This social and business acquaintance was obtained by a personal visit of the drummer to his desired customers location, something like the persuasive itinerants of these days, but not like them with catalogue and samples. His way of traveling was with an equestrian outfit, consisting of a horse, saddle, &c., which could be used independent of public conveyances, and sold at the end of the route, and was not adapted to the carrying of much impediments. These mercantile cavalry expeditions, which began at a prominent railroad

station or port, and thence swung around the circle, were spiced with adventure, especially for those whose towns led them through the West Carolinas and Eastern Tennessee. The drummer's imagination was then as now, very fertile, and he could build a large fabric of narration upon a small foundation of fact, which I believe is not a lost art with the fraternity. It might be interesting to repeat some of those tales of travel, but as space forbids, they must be imagined. There may have been samples carried in those days, but I do not recollect of any shown in the place of my sojourn, which was about 100 miles west of Raleigh, N. C., until they were brought there by the drummer of a Baltimore Hardware house. He came to us with a substantial covered carriage, of the carryall pattern, drawn by a pair of good horses, and loaded with a general assortment of Hardware samples for orders only. I am not aware how this method of showing the article itself, rather than a catalogue illustration of it, succeeded, but the scheme remains prominent in my remembrance from the fact, that, for some reason not recalled, the entire outfit was left in the care of my employer. The vehicle, minus the Hardware, made a comfortable family carriage, and we had many pleasant drives with that pair of strong horses. A part of those samples contained in two innocent looking trunks were placed in my charge for return to Baltimore, en route to my Northern home; and I rather enjoyed the discomfiture of baggage men and porters who undertook to take them unassisted. A hope that this recital may remind other ancients of other experiences is my apology for writing it.

Handling Agricultural Implements.

THE FOLLOWING LETTER explains itself, and we take pleasure in referring it to our readers. Perhaps some of them can make some suggestions in reply to our correspondent's inquiries:

I want to ask the readers of *The Iron Age* if there is any way that I can sell Agricultural Implements and Vehicles without carrying a stock of them? At least, I would like to begin in this way. My case may be a little peculiar, but I run a general store and carry some Hardware 12 miles from one railroad and 14 from another, but have not money enough to put in a stock of this kind, nor room to keep the goods under cover. The post office is in my store, and my trade is all with farmers. I have to take butter and eggs largely in exchange for my goods, and I send them to a commission man twice a week to sell. Drummers driving from one railroad town to the other, stop and see me, and it is from them that I got the idea of selling Implements. The Hardware drummers say, why don't you sell Implements and Vehicles? There is lots of money in them. Now, I thought if I could sell from cuts, or some other way, without carrying the goods in stock, that maybe I could sell at a small profit, and thus make it an inducement for farmers to buy from me instead of paying larger prices at the railroad towns. I should like to have the opinion of those familiar with this brand of Hardware business, and, if possible, get some idea of how I should go to work to carry out my scheme.

Exports.

PER SHIP ALEX. YATES, MARCH 9, 1891, FOR
SIDNEY, N. S. W.

By Edward Miller & Co.—40 packages Lamp Goods, 20 packages Lamp Goods.
By H. W. Peabody & Co.—2 cases Builders' Hardware.

By A. S. Lascelles & Co.—1 dozen Carbines, 4 dozen Picks, 2 cases Wooden Ware, 1 dozen Hay Knives, 6 dozen Locks, 20 dozen Axes, 1/2 dozen Lawn Mowers, 58 gross Pencils, 2 cases Scales, 1 case Wooden Ware, 1 dozen Hammers.

PER SHIP HABITANT, MARCH 9, 1891, FOR
MELBOURNE, AUSTRALIA.

By Plumb, Burdick & Barnard.—500 pounds Iron Bolts.

By Simpson, Hall, Miller & Co.—6 packages Britannia Ware.

By Sargent & Co.—6 cases Builders' Hardware.

By H. Disston & Sons.—307 pounds Shelf Hardware.

By Bradley & Hubbard Mfg. Company.—6 packages Lamp Goods.

By R. H. Dana & Co.—40 dozen Axes.

By A. Field & Sons.—542 pounds Iron Tacks.

By J. A. Babcock & Co.—948 pounds Plated Ware.

By Dunbar, Hobart & Co.—15,680 pounds Nails.

By Meriden Britannia Company.—8 boxes and 2 cases Platedware.

By Peck, Stow & Wilcox Company.—7 boxes Tinners' Tools, 4 cases Hammers.

By Russell & Erwin Mfg. Company.—37 cases Hardware, 20 kegs Nails, 36 cases Hardware.

By Edward Miller & Co.—87 packages and 3 boxes of Lamp Goods.

By Healy & Earl.—1 case Drills, 3 cases Forges, 1 case Punch and Shears, 1 case Dies.

By R. W. Forbes & Son.—23,000 Rivets, 12 dozen Braces.

By W. K. Freeman.—3 boxes Horse Nails, 1 box Shelf Hardware, 18,000 Shells and Cartridges.

By H. W. Peabody & Co.—14 cases Lawn Mowers, 33 packages Builders' Hardware, 168 packages Lampware, 51 cases Wringers, 24 crates Stoves, 2 crates Lawn Rakes, 18 dozen Rakes, 1 case Fruit Pickers.

By McLean Bros. & Rigg.—1 dozen Axes, 2 dozen Revolvers, 1 Pulley, 1 dozen Spring Butts, 30 dozen Axes, 25 dozen Screw Drivers, 60 packages Harvesting Machinery, 5 packages Threshers, 3 gross machine Oilers, 1 dozen Cork Pullers, 45 dozen Axes, 236 dozen Lamp Goods, 1 1/2 dozen Lanterns, 1065 packages Harvesting machinery.

By W. H. Crossman & Bro.—20 Cages, 6 dozen Saws, 600 pounds Nails, 2 dozen Pumps, 7 1/2 dozen Braces, 6 dozen Sifters, 12 dozen Bush Hooks, 5 dozen Wringers, 18 dozen Lanterns, 4 packages Lamp Goods, 1 case Carriage Hardware, 6 cases Builders' Hardware, 12 packages Lampware, 6 dozen Wrenches, 2 packages Plated Ware, 1 dozen Vises, 2 dozen Tills, 2 dozen Carpet Sweepers, 1 case Lamp Goods, 5 cases Builders' Hardware.

By Arkell & Douglas.—23 cases Winnowing Machinery, 24 packages Stoves, 4 crates Step Ladders, 5 cases Hoes and Forks, 2 cases Axes, 1 case Wood Hames, 3 dozen Planes, 3 Emery Wheels, 3 Bells, 10 dozen Axes, 9 dozen Dies, 1 dozen Boring Machines, 2 dozen Wringers, 3 dozen Saws, 26 dozen Axes, 7 dozen Forks, 6 dozen Hoes, 1 Plow, 224 pounds Oil Stone, 1 gross Whip Stocks, 9 dozen Locks, 2 dozen Picks, 4 dozen Saws, 9 dozen Traps, 224 pounds Nails, 4 dozen Wrenches, 4 dozen Bush Hooks, 9 dozen Strops, 20 dozen Thermometers, 6 dozen Wrenches, 8 dozen Door Springs, 600 pounds Tacks, 8 dozen Traps, 1 dozen Tills, 9 dozen Stocks, 13 dozen Saws, 732 pounds Bolts, 7 cases Rivets, 6 cases Axes, 12 cases Bolts, 1 case Nails, 4 cases Bolts, 91 dozen Axes, 4 dozen Wringers, 6 dozen Saws, 9 dozen Drills, 300 yards Wire Cloth, 3 dozen Wringers, 4 dozen Clamps, 9 dozen Wrenches, 2 dozen Grindstones, 78 dozen Axes.

By Australasian-American Shipping Company.—1 Lawn Mower, 1 case Silverware.

PER BARK MIMI, MARCH 18, 1891, FOR
SYDNEY, N. S. W.

By H. W. Peabody & Co.—1 case Brushes.

By Bradley & Hubbard Mfg. Company.—6 packages Lamp Goods.

By B. F. Avery & Sons.—13 packages Plows.

By Edward Miller & Co.—20 packages Lamp Goods.

By Ilsley, Doubleday & Co.—4 cases Hardware, 2 dozen Money Tills.

By W. H. Crossman & Bro.—800 pounds Staples, 3 dozen Sad Irons, 3 dozen Traps, 9 dozen Razor Strops, 6 dozen Saw Sets, 2 gross Traps, 6 dozen Pulleys, 6 dozen Hatchets, 100 Axes, 6 Bolt Cutters, 6 dozen Vege-

table Presses, 12 dozen Wrenches, 9 Scales, 4 dozen Wringers, 55 dozen Hardware, 100,000 Primers, 24 sets Tools, 17 cases Hardware.

By S. Hoffnung & Co.—9 dozen Bush Hooks, 4 gross Traps, 6 gross Pullers, 167 dozen Lamp Goods, 1 dozen Wringers, 20 dozen Snaths, 48 dozen Forks, 24 dozen Hoes, 38 pounds Nails, 1 dozen Tools, 1 box Bells, &c., 1 dozen Saws, 10 dozen Lamp Goods, 27 dozen Locks, 20 dozen Traps, 12,000 Cartridges, 10,000 Cartridge Shells.

By Australasian-American Shipping Company.—670 pounds Bolts and Nuts, 28 dozen Axes and Picks, 825 pounds Iron Bolts, 2150 pounds Carriage Hardware.

By Arkell & Douglas.—65 dozen Axes, 2 dozen Traps, 5 1/2 dozen Churns, 65 dozen Axes, 1500 pounds Staples, 870 pounds Bolts, 1 gross Egg Beaters, 6 dozen Wrenches, 3 dozen Broilers, 136 pounds Iron Washers, 13 gross Snaps, 1 gross Anti-Rattlers, 3 sets Springs, 12 dozen Hames, 5 cases Bolts.

PER SHIP SAMARIA, MARCH 21, 1891, FOR SYD-
NEY, N. S. W.

By J. L. Mott Iron Works.—34 packages Stoves.

By Reed & Barton.—35 packages Plated Ware.

By Winchester Repeating Arms Company.—40 Guns.

By W. K. Freeman.—1 case Saws.

By W. & B. Douglas.—35 Pumps.

By A. Field & Co.—62 boxes Iron Nails.

By Simpson, Hall, Miller & Co.—28 casks and 4 packages Plated Ware.

By Mailer & Quereau.—18 cases Axes.

By A. S. Lascelles & Co.—3 cases Tricycles, 15 dozen Lanterns.

By R. H. Dana & Co.—40 dozen Axes, 10 crates Corn Shellers, 1 case Belt Lacing.

By Healy & Earl.—2 boxes Forges, 2 boxes Blowers, 1 box Emery Wheels, 2 cases Saws, 8 Blowers, 5 cases Blacksmiths' Drills, 2 boxes Bolt Cutters, 1 box Blacksmiths' Drills, 2 cases Screw Cutters.

By Coombs, Crosby & Eddy.—24 dozen Hatchets, 83 dozen Tackle Blocks, 2 dozen Lanterns, 51 dozen Brushes, 1 dozen Pumps, 6 Pumps, 40 dozen Axes, 18 dozen Builders' Hardware, 572 pounds Tacks, 1 case Cages, 2 gross Polish, 2 Wringers.

By W. E. Peck.—2 cases Builders' Hardware, 1 case Plated Ware, 1 dozen Step Ladders.

By The F. B. Wheeler Company.—500,000 Butchers' Skewers, 1 case Carriage Hardware, 9 dozen Broilers, 28 pounds Whetstones, 3 dozen Rat Traps, 3 packages Builders' Hardware, 112 pounds Nails, 1 dozen Plated Ware, 2 dozen Hammers, 1 case Carriage Hardware, 1 1/2 dozen Cow Bells, 3 cases Builders' Hardware.

By H. W. Peabody & Co.—2 cases Tools, 1 crate Churns, 2 cases Carpet Sweepers, 1 case Step Ladders, 1 dozen Wringers, 2 cases Sandpaper, 4 packages Tools, 1 case Sandpaper, 14 pieces Pipe, 8 packages Pumps, 1 barrel Blocks, 6 cases Lanterns, 3 cases Nails, 1 case Step Ladders, 2 cases Glue, 1 case Lead Pencils, 9 packages Hardware, 3 tons Barb Wire, 1 case Egg Beaters, 4 racks Churns, 1 case Traps, 1 crate Money Drawers, 2 cases Bolts, 1 package Picture Cord, 1 case Emery Wheels, 5 packages Hardware, 9 packages Lampware, 1 coil Rubber Hose, 1 case Tools.

By McLean Bros. & Rigg.—1 dozen Store Trucks, 100 dozen Locks, &c., 20 dozen Axes, 3600 feet Garden Hose, 4 dozen Braces, 5 Miter Boxes, 28 pounds Whet Stones, 8 dozen Forks, 6 dozen Mattocks, 20 dozen Hammers, 20 dozen Hatchets, 6 dozen Mattocks, 5 dozen Locks, 1 dozen Cork Pullers, 60 sets Axes, 5 cases Carriage Hardware, 7 dozen Planes, 5 dozen Churns, 2 dozen Wringers, 12 dozen Braces, 6 dozen Lemon Squeezers, 1/2 dozen Air Guns, 1 1/2 dozen Lanterns, 16 dozen Axes, 2 dozen Broad Axes, 1 dozen Money Drawers, 50 dozen Saws, 7 Guns, 12,000 Metallic Cartridges, 5 gross Mouse Traps, 24 dozen Lemon Squeezers, 8 dozen Drills, 1 Drill, 1 gross Lemon Drills.

By W. H. Crossman & Bro.—3 dozen Transom Lifters, 1 case Builders' Hardware, 1 dozen Wringers, 1 case Builders' Hardware, 5 dozen Molasses Gates, 4 dozen Carpenters' Hardware, 1 case Builders' Hardware, 20 dozen Hatchets, 50,000 Primers, 12 dozen Razor Strops, 12 dozen Traps, 2 cases Fish Lines, 48 dozen Axes, 10 dozen Wrenches, 80 dozen Hatchets, 3 packages Grindstone Fixtures, 6 dozen Latches, 112 pounds Nails, 5 dozen Tills, 2 1/2 dozen Churns, 1 case Lamp Goods, 6 packages Builders' Hardware, 7 boxes, Carpenters' Hardware, 15 Wrenches, 2 dozen Air Rifles and Ammunition, 54 Mowers, 1500 feet Hose, 2 dozen Pumps, 4 1/2 dozen Churns, 18 Miter Boxes, 54 Churns, 6 Cultivators, 2 cases Pump parts, 44,840 pounds Barb Wire, 47 cases Builders' Hardware, 5 Lawn Mowers, 3 dozen Saw Sets, 1 dozen Corn Mills, 1 1/2 dozen Churns, 2 cases Plated Ware, 2 dozen Revolvers, 4 dozen Wrenches, 1900 pounds Iron Bolts, 1 case Carriage Hardware, 3 dozen Lanterns, 2 dozen Grindstone Fixtures, 2 dozen Cow Bells, 2 cases Builders' Hardware.

Oils.

Lard Oil.—The most important change during the past week has been in this line. Under the influence of a sharp advance in the cost of raw material, pressers have been obliged to mark their figures up 3¢ @ 4¢ on Oil, and needy buyers have had to pay as high as 55¢ for prime winter or present make Oil. The Lard market, it is admitted, is largely under speculative control, but the higher level of prices established for Oil are hardly on a level with the enhanced cost of Lard, and the indications are that a further advance will be made should present value of raw material be maintained.

Linseed Oil.—There has been no change in prices of either city or outside brands. The situation is such that crushers could establish a higher valuation for their product, there being harmony among the trade at all points, while the demand is running quite free. It would appear, however, that current rates afford a good margin of profit, and that crushers are adverse to any movement calculated to assist the trade in Linseed Oil mixtures or substitutes. Hence a conservative policy and less talk of prices being advanced.

Cottonseed Oil.—The market has continued active, and prices show a further advance. The advance in Lard has assisted sellers in some degree, but it is apparent that the Cotton Oil situation itself has improved greatly. Supplies are under control, and export, as well as home trade demand, is quite free. During the week probably 7500 barrels have been sold in this market, over one-half of which was for export, and the demand from shippers is still liberal. Crude sold at 25¢ @ 31¢, Summer Yellow at 33¢ @ 38¢, according to quality, and Summer White at 35¢. The highest prices of the week were reached on the latest transactions.

Sperm Oil.—Nearly 2000 barrels of crude Oil have been sold in New Bedford at 72¢ @ 73¢, and the market, reducing the supply at first hands to about 8400 barrels. There is still a very fair demand, particularly for export account. The manufactured products are moving in about the usual manner, and at firm prices.

Menhaden and Whale Oils.—In this line the situation is practically the same as it was a week ago. No important movement in crude product has taken place, and the distribution of the manufactured Oils is of about the usual proportions.

Miscellaneous.—Cocanut Oils are more freely offered and both Ceylon and Cochin may be had at rather lower prices. The latter is now offered at 8 1/2¢ on spot. Ceylon sold at 6 1/2¢, ex-store, and is offered at 6 1/2¢, to arrive. Olive Oil is moving rather slowly and prices have turned slightly in buyers' favor. Other Oils rather slow at present and without change in value.

Spirits Turpentine.—Prices have turned for the better and the market has shown decided firmness the past few days, under the influence of fairly large purchases here and at the Southern centers. Current quotations are 41¢ for regular and 41 1/2¢ for machine barrels.

A dispatch from Pittsburgh says that a number of operators in the coke region have decided to start at a 10 per cent. reduction. The works now running are Rainey's, 1018 ovens; Mt. Braddock, 130 ovens; Pennsylvania, 88 ovens; Percy, 62 ovens; Fairchance, 60 ovens; in all 1358, out of 16,119 ovens. Preparations have been made for a resumption of the Dunbar Furnace Company's plant of 320 ovens; Reed Brothers, 74 ovens, and Mahoning, 100, which will make a total of 1852 ovens. The Frick and McClure companies, controlling the balance of the ovens, have as yet made no sign.

New Windmill.

In constructing a windmill suitable to the popular demand of the consumer and dealer, the elements of simplicity, durability and cheapness are the first to be considered. These features the Buckeye Windmill, here illustrated, is claimed to possess. Nearly all windmills are made and governed by hinging the wheel and tail piece together, and weights that raise and fall as the wheel tries to protect itself from the force and fury of high winds; thus the wheel is forced against the tail piece, which is the great cause of windmills being broken. Many attempts have been made to govern wind wheels upon the centrifugal principle, as applied to team engines, but the application of the two forces, wind and steam, are so differ-

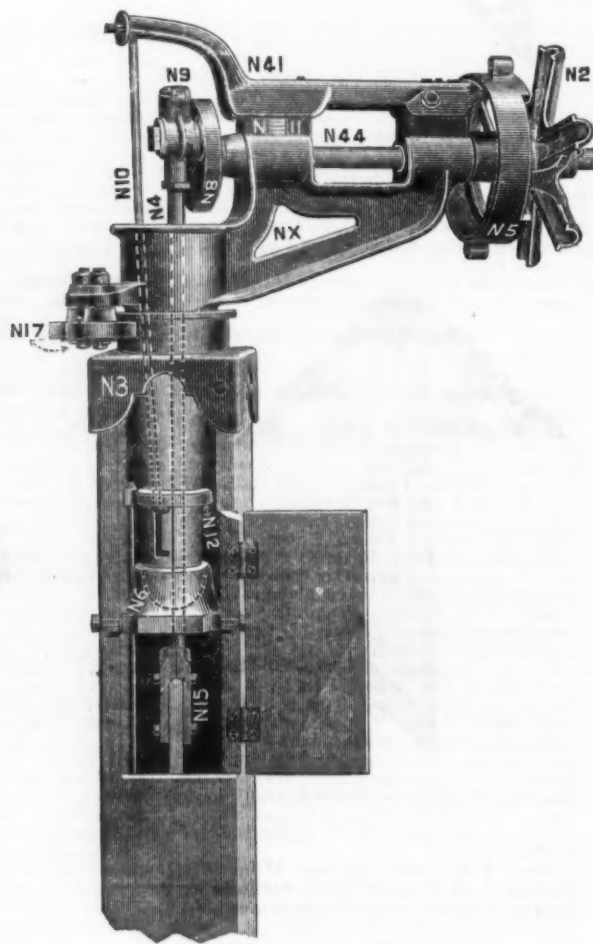
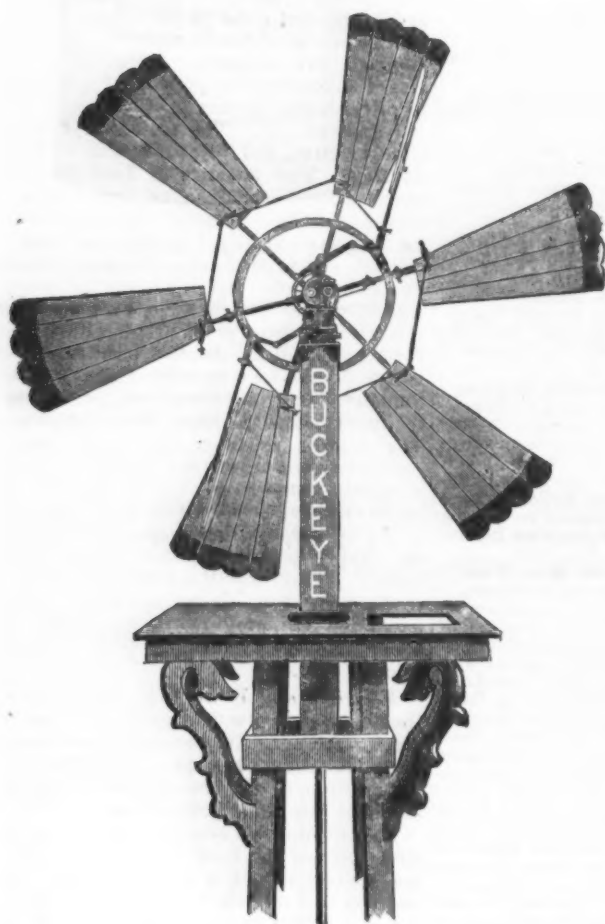
the wind. NX is made some smaller than the inside of N 3, and does not come in contact with the post cap, only through the friction wheels, which have their bearing on the outside of the cap, hence the weight of the machine is thrown upon these rollers, which causes the engine to be extremely sensitive upon the post and thereby able to adjust itself to the lightest wind. The steel shaft N 44 has its bearings in two long brass boxes set in NX, and made removable. The wrist pin on N 8, also turns in a large brass box set in N 9, also made removable. N 9 is provided with a large oil cup, covered, as also is NX, for the main shaft, and these cups are covered by the brake lever N 41.

The wheel is composed of a heavy cast iron spider or hub, N 2, to which are bolted the radial arms and the frame work

it is the lightest, strongest, best designed, and has the fewest parts of any wheel on the market.

Ancient Carpenters' Tools.

A very interesting discovery is reported at the Roman city of Silchester, England. The excavators came across a dry well, which on being explored proved quite a little museum of antiquities. Some 15 feet down, a *Times* correspondent says, the diggers found an urn-shaped pottery vase, about 1 foot in length, quite intact, and, curiously enough, protected by lumps of chalk built around it. The vase, which probably originally contained some precious substance, was, however, quite empty. Above it were deposited a great number of iron implements, most of which were in a wonderful state of preservation.



THE NEW BUCKEYE WINDMILL.

ent, the weights and balls acting so slowly, the wheel has first to receive the shock of the wind. In the windmill here shown, the centrifugal fan governors applied to it take advantage of the pressure of the wind upon the wheel, also the number of revolutions it is making. It is stated to be the first and only wheel on the market having a governing device adapted to take advantage of both the pressure of the wind and speed of the wheel to regulate its motion without the serious objection of being puffed out by high winds and sudden jars and strains. It is made to operate without a tail piece.

The main casting NX is mounted upon a hollow mast post, the stem of which passes down through the post cap N 3, its lower end resting in N 6. To NX above the post cap are attached two friction rollers N 17, which engage the cap, and travel around on it as the engine is turned to adjust itself to the direction of

of the wheel, which are made of wrought iron. The sails, or wind fans, are made of slats of clear and well seasoned yellow poplar, set closely together, and securely nailed to white oak battens on the back of the sails with wrought-iron nails, clinched. Each sail is pivoted lengthwise to one of the radial arms by two hinges having chilled bearings, and so constructed as to be entirely noiseless.

The governing device consists of two centrifugal governor fans, attached to elbows, and these governor fans are connected with the sails by rods and to each other by links and brake wheel N 5, the latter being free to turn on the hub of N 2, independently of the wind wheel. The sails are held normally in the wind by the governor springs, which are made to operate together through their connections with N 5.

This windmill is made by Mast, Foos & Co. of Springfield, Ohio, who claim that

They seem to have been the tools of a carpenter and a coppersmith or silversmith, with some miscellaneous objects of blacksmith's work thrown in. The principal specimen is a carpenter's plane of quite modern type, although unquestionably more than 1500 years old, three or four axes retaining their fine cutting edges and quite serviceable, a number of chisels and gouges of all shapes and sizes, hammers, adzes, saws, files, &c. In the smith's department may be specified a brazier for burning charcoal, quite complete; two or three anvils of different sizes and shapes, a fine pair of tongs adapted for lifting crucibles, a curious tripod candelabrum lamp or candlestick, and several other curious objects, the precise uses of which have not yet been determined. In addition there are several large bars of iron, a couple of plow shares and a broken sword. It is thought probable that more will be found deeper down in the well.

Stilwell's Patent Adjustable Square and Bevel.

Charles Stilwell, Morristown, N. J., is introducing an adjustable square and bevel, as illustrated in Figs. 1, 2 and 3.

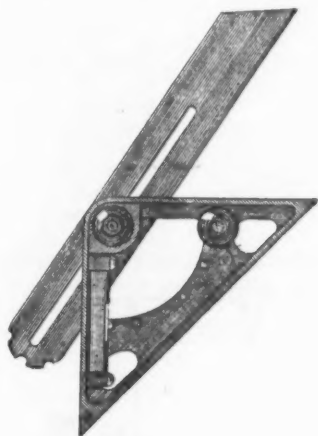


Fig. 1.—As a Plumb.

The tool has but one blade and one head, without the necessity of interchange or separation in using it. The head is described as made of the best gray cast iron;

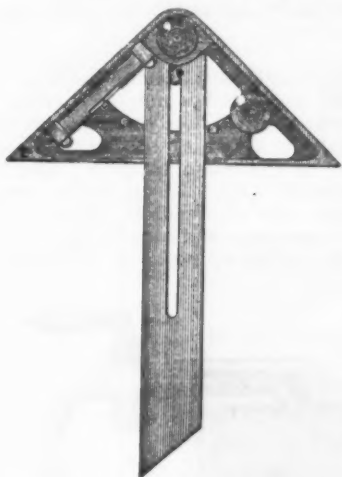


Fig. 2.—As a Tee or Radial Square.

the blade is of steel 12 inches long and slotted one-half of its length. The blade is pivoted upon a steel disk, fitted in a beveled seat at the apex of the triangular

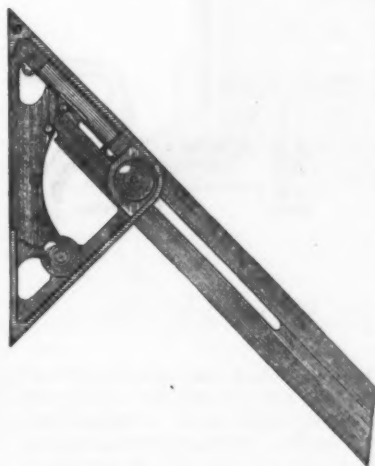


Fig. 3.—As a Square and Level.

head in such a manner as to prevent the blade from being easily moved when the thumb screw is tightened. The thumb screw is also designed to take up any wear

that may occur, so that the accuracy of the tool will always be preserved. The illustrations given, it is stated, show but three of the eight different positions to which this tool can be positively adjusted. The manufacturer points out that it can be instantly adjusted to do the work of an ordinary try square, bevel and tee or radial square; that it has positive adjustments for a square miter, octagon miter and a hexagon miter; that it can be used as an inside or set square, and that as a bevel it is invaluable for laying out braces or rafters of any desired angle, having the lines of both ends set at the same time. The point is made that the spirit level, which is removable in case of necessity to replace the vial, is equal to an ordinary level of 14 inches in length for leveling or plumbing purposes. The adjustable square and bevel is warranted by the manufacturer to be accurate and durable in all its parts and adjustments for all practical purposes.

The Wilzin Patent Automatic Knife.

The Automatic Knife Company, Middletown, Conn., are putting upon the market a new pattern of their automatic knife, as illustrated herewith. The manufacturers state that in their construction these knives are quite as durable and simple as the regular pocket knives, their parts being almost identically the same, though arranged in a somewhat different manner. In appearance they have the advantage of blades more completely sunk in the handle. The claim is made that they make high-grade knives only, and every blade is warranted to be hand forged from the very finest Sheffield blade steel, carefully hardened and tempered and fin-

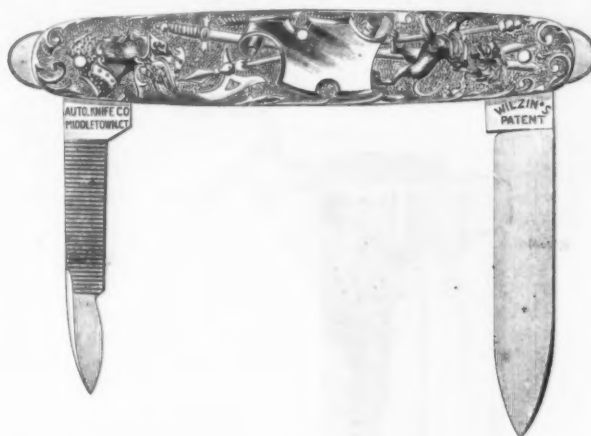


Fig. 1.—The Wilzin Patent Automatic Knife.

ished in superior style. To open the knife, the knob A is pushed in the direction indicated by the arrow, as shown in Fig. 2. The blade will automatically assume a partly open position, from which it can be fully opened with ease. In closing the knife the blade is pushed into the handle until it locks with an audible click. It is claimed that in using this knife there is

The Niagara Safety Oil and Gasoline Can.

Gray & French, Middleport, N. Y., are putting upon the market an oil and gasoline can, as illustrated herewith. This is



The Niagara Safety Oil and Gasoline Can.

described as being hand-made from B B galvanized iron, and by practical, experienced workmen. It has a corrugated raised bottom and seamless top, a brass nickel-plated compression faucet, which is warranted not to leak when properly

screwed down. It is claimed that each can is tested by a new process and warranted not to leak, and that it is a durable can and sells well. The label is oval in shape, 7 x 10 inches, printed in colors. On the center portion is a representation of Niagara Falls, surrounded by a bright red border, which is lettered as shown in the cut. The bands at top and bottom



Fig. 2.—Showing How the Wilzin Knife is Operated.

no more breaking and bending of finger nails, no sharp corners or projecting edges; that it can be easily opened with gloves on, with chilled hands, or without looking for the nicks in the blade.

are painted carmine. These cans are made in 3, 5 and 10 gallon sizes, and present a very neat and attractive appearance. They are sold to the jobbing trade only.

Carboy Stand.

Star Lock Works, Philadelphia, Pa., are introducing a carboy stand, as illustrated, Fig. 1. This shows the carrying and tilting device, while Fig. 2 gives a

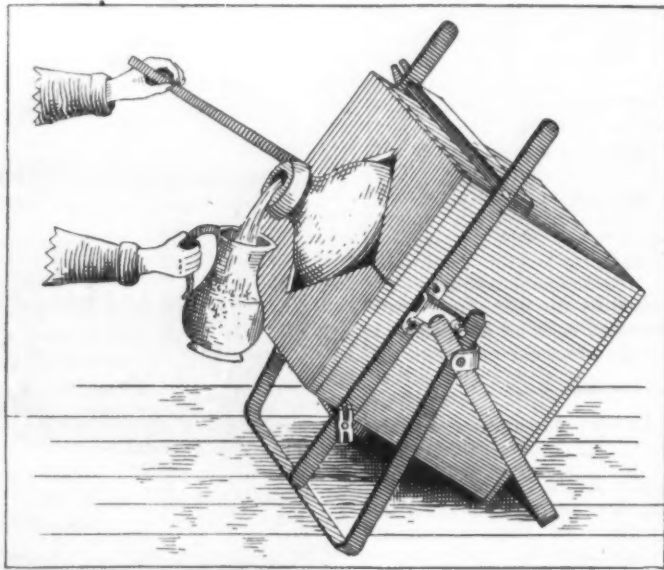


Fig. 1.—Carboy Stand.

sectional view of the same. The carrying bars are fastened or clamped to a carboy by means of two screw-bolts which rest on the cleats of the box. These bars are of such lengths as to project beyond the ends of the box; the projections serving as handles by which the carboy may be carried. The stand can be folded up in a compact manner for transportation or for storage. It is designed to overcome the difficult and dangerous operation of carrying and tilting heavy carboys, and to allow

all taxable persons, firms and corporations of a specific and itemized inventory of every article of real and personal property, and also a full itemized statement of every debt due, and the name, residence and place of business of every person or per-

by faucet No. 1, at a rate, it is stated, of 15 to 20 gallons per hour. It is claimed that the filter is so constructed that the greater part of all the impurities in the supply water are separated and thrown off before it reaches the filter chamber; also that it is self-washing in its operation, thus continually cleansing itself and requiring no skill or attention in its management, as it cannot become clogged or filled up with impurities. The whole filter is nickel plated, and the materials used in its con-

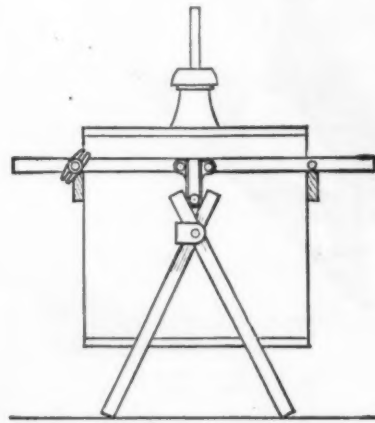


Fig. 2.—Carboy Stand, Sectional View.

sons to whom the debts are owing. A full disclosure is thus compelled annually of the entire property and business relations of every adult inhabitant of the State.

The Crystal Filter.

The Crystal Filter Company, Buffalo, N. Y., are putting on the market a filter, as illustrated herewith. Fig. 1 shows the filter with the supply pipe at the bottom,

struction are referred to as the best that can be obtained.

The Seattle Chamber of Commerce has lately established a mining bureau, and recently an invitation was extended to all persons interested in the mining development of the State to meet. About 75 responded, and nearly every mining district was represented. There is no doubt that iron will soon be manufactured on an extensive scale in Washington.



Fig. 1.—The Crystal Filter.

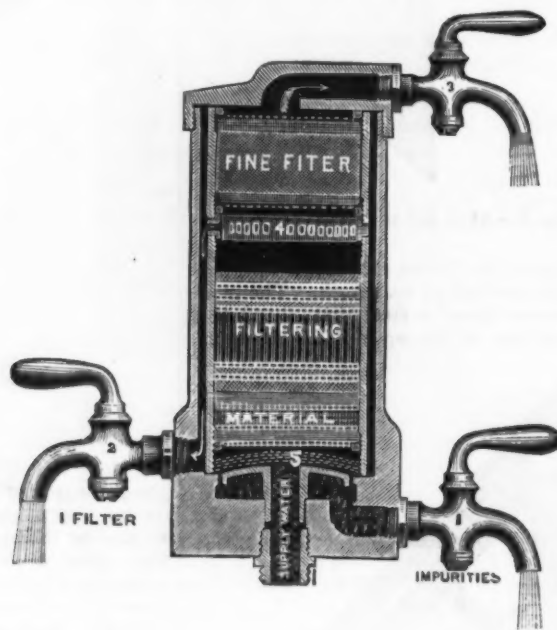


Fig. 2.—Sectional View of Crystal Filter.

of any quantity of liquid being drawn without the danger of spilling the same, thereby saving a considerable amount of labor and material. The stand is made in a substantial manner of bar iron, and japanned.

Merchants and traders in New York are organizing to oppose the Tax-Listing bill now pending in the Legislature. The obnoxious bills contain very stringent provisions compelling the annual filing by

to be attached to the water pipe. Fig. 2 shows the course of the water. Leaving the supply pipe, it is forced through the perforated disks, which are intended to arrest the grosser impurities and to have them washed off through faucet No. 2. This faucet is to be left open when drawing filtered water. The water, after passing the disks, continues its course slowly through the filtering material into the chamber at the top, and may be drawn off

There is a blast furnace already in operation in Port Townsend. Seattle is making a vigorous effort to secure extensive iron works. Ellensburg has made a contract for the erection of a furnace, and expects to have it in operation early the coming season. Ellensburg is also contracting for rolling mills, steel works, car works and other important industries, which will employ a large number of men.

Rival Rat Trap.

Jno M. Waddel Mfg. Company, Greenfield, Ohio, are introducing a rat trap, as shown in the accompanying illustration. The manufacturers state that while the Rival is not strictly a self setter, it has



Rival Rat Trap.

decided advantages in setting over other traps with rigid uprights. They claim that the troublesome matter in manipulating a trigger wire to set a trap is overcome on the Rival. The trap is placed on

it works rapidly, and that a man can do the twisting as fast as one can put in the pickets. It is also claimed that it will work in a narrow space, and do the work

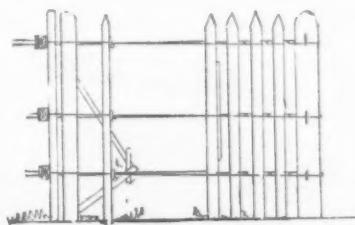


Fig. 2.—Constructing the Fence.

equally well whether the different strands of wires are 2 inches or 2 feet apart.

Champion Air Carbine.

The Henry C. Hart Mfg. Company, Detroit, Mich., are putting on the market a muzzle-loading air gun, as illustrated herewith. This has a steel-blue hexagon barrel, hard maple stock, black walnut finish. It is referred to as having especially strong parts, and as possessing the advantage of having no parts but that can be easily detached and replaced by the use of four screws, as none of them are soldered or riveted together. It is claimed



Champion Air Carbine.

the market to meet the demand for a good low-priced article.

Farmers' Friend Fence Machine.

J. C. Kremer, Wadsworth, Ohio, is introducing a fence machine, as illustrated in Fig. 1. This consists of a crank pass-



Fig. 1.—Farmers' Friend Fence Machine.

ing through a hollow handle, at the end of which is a beveled gear wheel, actuated by a cog wheel. After the wires and pickets of the fence have been put in position, as shown in Fig. 2, the slot in the gear wheel is slipped on the wires between the pickets and the crank turned until the space is tight. It is stated that it is a continuous twister and need not be removed from the wires until the picket is tight, without regard to the width of the space between pickets. It is claimed that

that this gun is a strong shooter, possessing force and accuracy.

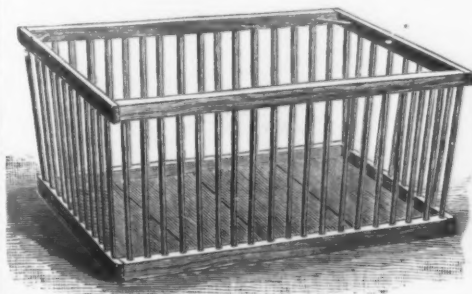
Grocers' Delivery and Fruit Crate.

Rugg Mfg. Company, Greenfield, Mass., are introducing a crate, as illustrated herewith. These crates are strongly made and well finished, of white ash and hickory wood. The manufacturers claim that these baskets have the following advan-

the crates, and that the sides being more open, a better circulation of air is obtained, fruit and other perishable contents thus keeping much better.

Swift Safety.

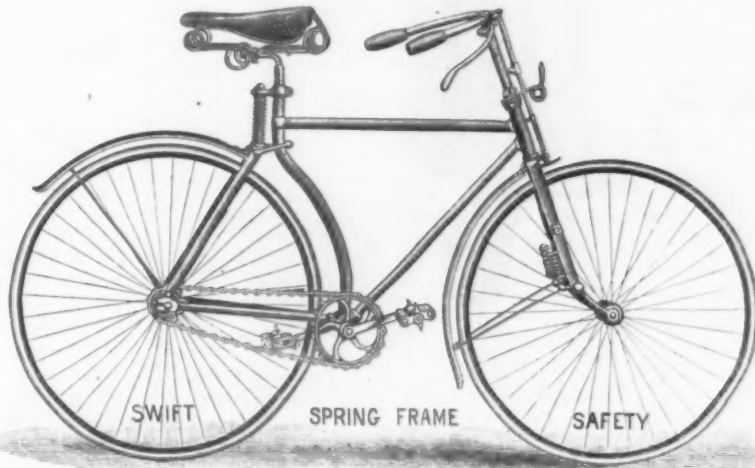
The Coventry Machinist Company, 239 Columbus avenue, Boston, are introducing a spring-frame wheel, as illustrated herewith. The spiral spring near the seat-post



Grocers' Delivery and Fruit Crate.

tube is compressed by the weight of the rider in going over rough roads, the rear portion of the frame giving by means of a hinge joint at the back of the crank shaft bearing. The spiral spring is adjustable by means of a nut, enabling the rider to

regulate the tension to the amount of spring required. The front fork springs are made adjustable by the same means. Although the whole frame of the machine gives, the distance from the saddle to the pedals never varies. The machines are fitted with a forged roller chain, consisting of hardened movable rollers in each link, designed to save friction and to wear evenly. The manufacturers state that in the nine years that they have been using the roller chain they have not known one to



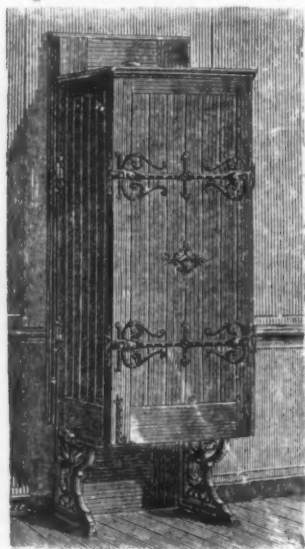
Swift Safety

tages over the baskets commonly used: That they are strong and durable; that they can be packed one above another to any desired height without covers and without injuring the contents of any of

be worn out. The Swift is made with solid or 1-inch cushion tire, as desired. The wheel is referred to as being remarkable for its gracefulness in outline and simplicity of construction.

A French Folding Bathtub.

A Paris letter from M. Brincourt that appeared in a recent issue of the *American Architect and Building News* describes a French folding bathtub that will be of interest in this country, where folding bathtubs are coming into use. We are indebted to the *American Architect* for the



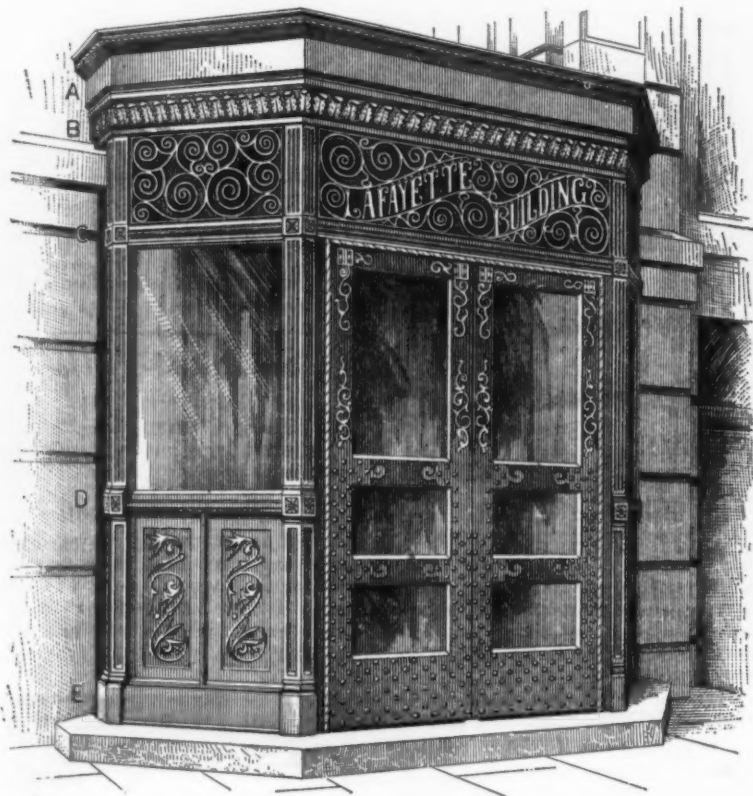
A French Folding Bathtub.—Fig. 1.—
Bathtub Closed.

cuts illustrating the apparatus, which is described in the letter as follows:

People have been particularly busy for some years past with increasing the comfort of our habitations. Hygiene begins to have weight in our manners and customs, sometimes making demands incompatible with the restricted area of our apartments; for frequently it is impossible to set up in our narrow dressing rooms the smallest hydropathic apparatus, and still more impossible to install a bath with its accessories, the bath warmer and linen

the aspect of a cupboard, or rather a wardrobe, of pleasing appearance. It takes up a space of only 60 cm. square, yet it contains everything that is necessary for the bath—the tub itself, the water warmer, and space for drying the linen. The an-

the water is heated instantaneously by means of a gas ring, which extinguishes itself automatically if the water is not present, so that it is impossible to burn out the boiler. To empty the bath, it is only necessary to pull the plug from the



An Ornamental Storm House.

nexed figures exhibit the apparatus. The panel which forms the front of the fixture is held at the sides by four pegs. These withdrawn, the panel is loosened and can be tilted forward, for it is in reality a

waste, which is connected by a rubber pipe with the general waste pipe of the house. The tub when emptied can be turned into place, and the doors folded over it. In the second figure, which shows the apparatus open and the bath ready for use, can be seen the water warmer and hot closet above it, which is made of fire clay, all of which is included within the void of the tub when that is raised, so that the whole apparatus occupies the least possible space. This apparatus seems to me worth mentioning for its novelty, for I believe that it can be of real service in cities where space is parsimoniously distributed. To complete the information, I will say that the price of the simplest form of the apparatus is 500 francs, but there are more elaborate forms which cost as high as 1500 francs.



Fig. 2.—Bathtub Open for Use.

drier. M. Chaboche, having considered this interesting question, to-day answers it in a very ingenious manner with an apparatus to which he has given the name of the "Siren," which certainly can render a good service from the standpoint of comfort. Here is an apparatus which has

bathtub which revolves about a fixed axis, that is borne by two iron brackets, which seem to support the apparatus when it is closed. When the tub is folded down horizontally there is seen attached to the wall an apparatus for warming the water, which is arranged in such a fashion that

There has lately been placed in front of the Lafayette Building in Chicago a very ornamental structure that, if made of boards and common window sash would probably be called a storm house. This structure, a view of which is given, is mainly composed of cast iron, which has been covered with a coat of copper by the aid of electricity, and so resembles cast copper. Referring to the engraving, A is a trough, which, like the roof covering, is composed of sheet metal. Between A and B is solid metal, while from B to C is ornamental open iron work, and which is, like the rest of the work, covered with copper. From C to D is glass, and from D to E solid metal. The doors are of oak with copper trimmings, and a liberal use of plate glass allows the light to enter freely. The doors are so constructed as to swing either way, and are kept shut by heavy spring hinges.

Sign Letters.

Brown & Sharpe Mfg. Company, Providence, R. I., are introducing sign letters, as illustrated in Fig. 1. The letters are cast iron, and are designed to make an attractive, plain and durable sign. The beveled edges are referred to as preserving the correct appearance throughout a wide

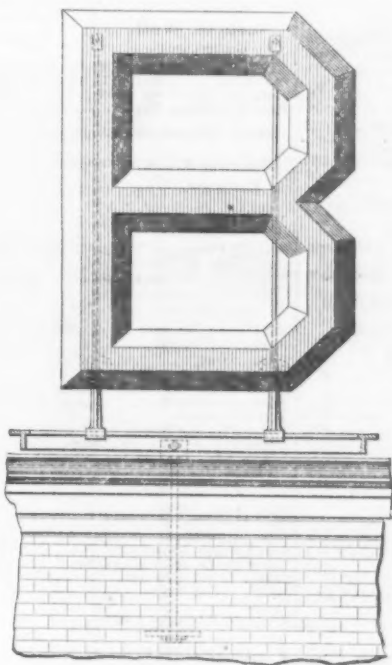


Fig. 1.—Sign Letters.

range of view. Fig. 2 indicates the method used in mounting the letters. It will be noticed Fig. 1 illustrates the mounting on a roof with a cornice, while Fig. 2 indicates the mounting on a roof with coping, showing that mountings are adapted to different styles of roofs. The letters are made both 4 and 5 feet

horse-power each, and can turn out 500 pairs an hour. A Manchester writer says "Americans are miles ahead" in this business.

Eel-Guard Pipe Tap.

A. B. Fisher, 385 Kent avenue, Brooklyn, N. Y., manufactures an eel or fish

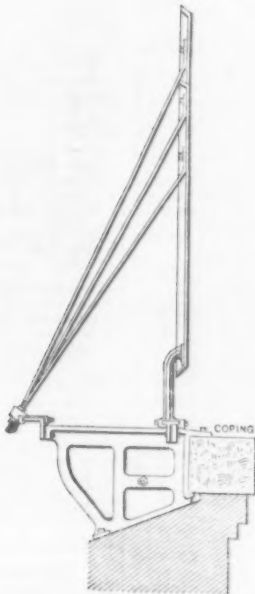


Fig. 2.—Method of Mounting Sign Letters.

guard pipe tap for use in tapping streamains for supplying houses with water. A general view of this device is shown in Fig. 1, while Fig. 2 is a broken view of the shank, illustrating the construction of the guard. The device is intended to prevent eels, fish, frogs and the like from entering the water taps and stopping the



Eel Guard Pipe Tap.—Fig. 1.—General View of Tap.

high, and are painted to suit the color and situation of the building upon which they are to be used. The letters are designed principally for manufacturing establishments, and were brought into use by the necessity of a suitable sign for their works. They appreciated the fact that the railroads daily brought thousands of strangers within sight of their works, and they knew the buildings deserved a good sign, but they did not know where to buy one that just suited them. Finally they made one. It has pleased many, and now they have complete alphabets of both sizes of letters.

American shoe machinery has been introduced at Leicester, England, which has for a motive power two engines of 150

water supply to the neighboring house. As shown in Fig. 1, the shank of the tap has four oval orifices near the end, and the extreme end has four round holes in it

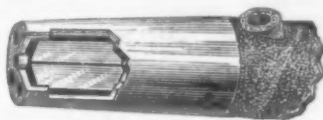


Fig. 2.—Broken View of Tap Shank.

as well. The guard consists of a four-bladed knife made of sheet brass soldered along the edges and also at the perforated end. The appearance of this knife is

clearly shown in Fig. 2, and, as will be seen by Fig. 1, there is a blade across each oval opening to prevent the entrance of eels and the consequent obstruction of the flow. These taps are of three sizes, $\frac{3}{4}$, $\frac{1}{2}$ and $\frac{3}{8}$ inch respectively, and are made either for driving into the main or provided with screw threads, as may be desired. We understand that this device has been used extensively in Brooklyn and some other cities, and has given excellent satisfaction.

A neat elevator for delivering billets into cars for shipping has been in use for some time past at the works of the Bethlehem Iron Company, South Bethlehem, Pa. Recently the company have added a second of these Stubblebine elevators.

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CURRENT HARDWARE PRICES.

MARCH 25, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic..... \$ dos \$5.00, 33¢
Excelsior..... \$ dos \$10.00, 50¢
Washburn's Self-Locking..... 20¢

Ammunition.—

Caps, Percussion, 1000—
Hicks & Goldmark's and Union Metallic
Cartridge Co.
F. L. Waterproof, 1-10's..... 34¢
E. B. Trimm'd Edge, 1-10's..... 46¢
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 46¢
Musket Waterproof, 1-10's..... 50¢
G. D..... 28¢
S. B. Genuine Imported..... 45¢
Eley's E. B..... 54¢
Eley's D Waterproof, Central Fire..... \$1.60

Cartridges—

Rim Fire Cartridges..... 50¢
Rim Fire Military..... 15¢
Cent. Fire, Pistol and Rifle..... 25¢
Cent. Fire, Military and Sporting..... 15¢
Blank Cartridges, except 22 and 32 cal.,
additional 10¢ on above discounts.
Blank Cartridges, 22 cal., \$1.75..... 2¢
Blank Cartridges, 32 cal., \$3.50..... 2¢
Primed Shells and Bullets..... 15¢
B. B. Caps, Round Ball, \$1.75..... 2¢
B. B. Caps, Con. Ball, Swad., \$2.00..... 2¢

Primers—

Berdan Primers, \$1.00..... 2¢
B. L. Caps (for Sturtevant Shells) \$1.00..... 2¢
All other Primers, \$1.20..... 2¢

Shells—

First quality 4, 8, 10 and 12 gauge..... 25¢
First quality, 14, 16 and 20 gauge (\$10
Hut)..... 30¢
Star, Club, Rival and Climax brands..... 30¢
Selbold's Comb. Shot Shells..... 15¢
Brass Shot Shells, 1st quality..... 60¢
Brass Shot Shells, Club, Rival, Climax..... 65¢

Shells Loaded—

Standard List, July 10, 1890..... 40¢
Wads—Price per M.
U. M. C. & W. R. A.—B. E., 11 up..... 68¢
U. M. C. & W. R. A.—B. E., 8 up..... 82¢
U. M. C. & W. R. A.—B. E., 7 up..... 96¢
U. M. C. & W. R. A.—B. E., 6 up..... 110¢
U. M. C. & W. R. A.—P. E., 11 up..... 115¢
U. M. C. & W. R. A.—P. E., 8 up..... 150¢
U. M. C. & W. R. A.—P. E., 7 up..... 170¢
U. M. C. & W. R. A.—P. E., 6 up..... 180¢
Eley's B. E., 11 up..... \$1.75
Eley's P. E., 11 up..... 2.80

Anvils.—

Eagle Anvil, 100..... 15¢
Peter Wright's..... 11¢
Armstrong's Mouse Hole..... 10¢
Armstrong's Mouse Hole, Extra..... 12¢
Trenton..... 10¢
Wilkinson's..... 10¢
Moore & Barnes Mfg. Co..... 83¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00..... 20¢
Cheney Anvil and Vise..... 25¢
Allen Anvil and Vise, \$3.00..... 40¢
Star..... 45¢

Apple Parers—See Parers, Apple.

Augers and Bits—

Douglass Mfg. Co..... 70¢
Wm. A. Ives & Co..... 70¢
Humphreysville Mfg. Co..... 70¢
French, Swift & Co. (F. H. Beecher)
P. S. & W. Co.
Rockford Bit Company..... 70¢
Cook's, Douglass Mfg. Co..... 55¢
Cook's, N. H. Copper Co. 50¢
Ives' Circular Lip..... 60¢
Patent Solid Head..... 30¢
C. E. Jennings & Co., No. 10, extension
lip..... 40¢
C. E. Jennings & Co., No. 30..... 60¢
C. E. Jennings & Co., Auger Bits, 1/2 set,
32¢
Lewis' Patent Single Twist..... 45¢
Ausoll Jennings' Augers and Bits..... 45¢
Imitation Jennings' Bits..... 60¢
Fugh's Black..... 20¢
Rockford, Jennings' Pattern..... 60¢
Car Bits, P. S. & W. Co..... 60¢
Snell's Car Bits..... 60¢
L. Hommedieu Car Bits..... 15¢
Forstner Pat. Auger Bits..... 20¢
Cincinnati Bell-Hangers' Bits..... 80¢

Bit Stock Drills—

Standard..... 50¢
Cleveland..... 50¢
Lever, Taylor's Bronzed or Plated..... 50¢
Lever, Taylor's Japaned..... 50¢
Williams' or Holt's, for metal..... 50¢
Williams' or Holt's, for wood..... 40¢
Cincinnati, for wood..... 30¢
Cincinnati, for metal..... 45¢

Expansive Bits—

Clark's small, 1/8; large, 3/8..... 35¢
Ives' No. 4, 1/2 dos \$60..... 40¢
Swan's..... 40¢
Steer's No. 1, 1/2; No. 2, 3/4..... 35¢
Sears' No. 2, 1/2..... 20¢

Gimlet Bits—

Common..... \$ gross \$2.75, \$3.25
Diamond..... \$ dos \$1.10, 25¢
See..... 25¢
Double Cut, Shephardson's..... 45¢

Double Cut, Ct. Valley Mfg. Co..... 30¢
Double Cut, Hartwell's, 1/2 gro..... 25¢
Double Cut, Douglass..... 40¢
Double Cut, Ives..... 60¢

Hollow Augers—

Ives..... 35¢
Douglass..... 35¢
Bonney's Adjustable, 1/2 dos \$48..... 40¢
Stearns..... 20¢
Ives' Expansive, each \$4.50..... 50¢
Universal Expansive, each \$4.50..... 20¢
Wood's..... 25¢
Cincinnati Adjustable..... 25¢
Cincinnati Standard..... 25¢

Ship Augers and Bits—

L. Hommedieu's..... 15¢
Watrous..... 15¢
Snell's..... 15¢
Snell's Ship Auger Pat'n Car Bits..... 15¢

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—
Awls, Sewing, Common \$ gr \$1.70, 35¢
Awls, Should. Peg, \$ gr \$2.45, 40¢
Awls, Pat. Peg, \$ gr \$3.50, 40¢
Awls, Shouldered Brad, 2.70 \$ gr..... 35¢
Awls, Handled Brad, \$ gr \$7.50, 45¢
Awls, Handled Scratch \$ gr, \$7.50, 35¢
Awls, Socket Scratch, \$ dos, \$1.50, 25¢

Awl and Tool Sets—See Sets, Awl

and Tool.
Axes—
First quality, best brands, \$7.00..... 50¢
Second quality..... 6.00..... 55¢
Axe Grease—See Grease, Axe.

Axles—

No. 1, 1/4, 5/8, No. 2, 1/2, 3/4, 1 inch..... 5¢
Nos. 7 to 14..... 5¢
Nos. 15 to 18..... 47¢
Nos. 19 to 22..... 70¢
Concord Axles, loose collar..... 5¢
Concord Axles, solid collar..... 6¢
National Tubular Self-Oiling..... 35¢

Bag Holders—See Holders, Bag.

Balances—

Spring Balances..... 40¢
Chatillon, \$ dos..... 40¢
Chatillon Straight Balances..... 40¢
Chatillon Circular Balances..... 50¢

Bars.

Cross—
Cast Steel..... \$ 3 3/4
Iron, Steel Points..... \$ 3 3/4

Basins, Wash—

Standard Fiberware, No. 1, 10 1/2-inch, \$2;
12-inch, \$2.25; 13 1/2-inch, \$2.75; 15-inch,
\$3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82..... 50¢
Chatillon's No. 1..... 50¢
Chatillon's No. 2..... 50¢
Custer's..... 33¢

Beaters—

Egg—
Dover..... \$ dos \$1.50
Duplex (Standard Co.)..... \$ dos \$1.25
Rival (Standard Co.)..... \$ dos \$1.00
Duplex Extra Heavy (Standard Co.)..... \$ dos \$3.50

Bryant's..... \$ gro \$14.00
Double (H. & R. Mfg. Co.), \$ gro. No. 0,
\$12.00; No. 1, \$15.00; No. 2, \$16.00
Eazy (H. & R. Mfg. Co.)..... \$ gro \$12.00
Triple (H. & R. Mfg. Co.)..... \$ gro \$15.50
Spiral..... \$ gro \$4.25 to \$4.50
Improved acme (H. & R. Mfg. Co.)..... \$ gro \$9.00
Paine, Diehl & Co.'s..... \$ gro \$24.00
Silver & Co..... \$ dos \$5.50

Culinary.

Keystone, P. D. & C., Each, No. 1, \$1; No.
2, \$2..... 20¢

Bells—

Cow—
Common Wrought..... 60¢
Western, Sargent's list..... 70¢
Kentucky, "Star"..... 70¢
Kentucky, Sargent's list..... 70¢
Dodge, Genuine Kentucky..... 70¢
Texas Star..... 60¢
Call..... 50¢
Furn Bells..... \$ 3 3/4
Steel Alloy Church and School Bells..... 40¢

Door—

Gong, Abbe's..... 33¢
Gong, Yankee..... 45¢
Gong, Barlow's..... 50¢
Crane, Taylor's..... 25¢
Crane, Brooks'..... 25¢
Crane, Cone's..... 10¢
Crane, Connel's..... 20¢
Lever, Sargent's..... 60¢
Lever, Taylor's Bronzed or Plated..... net
Lever, Taylor's Japaned..... 25¢
Lever, H. E. M. Co.'s..... 50¢
Pull, Brooks'..... 50¢
Pull, Western..... 25¢

Electric.

Wollensak's..... 20¢
Bigelow & Dowse..... 20¢
Taylor's..... 20¢

Hand—

Light Brass..... 75¢
Extra Heavy..... 65¢
White Metal..... 60¢
Silver Chime..... 35¢
Globe Cone's Patent..... 25¢

Bellows—

Blacksmith's..... 60¢
Molders'..... 40¢
Hand Bellows..... 40¢

Belting, Rubber—

Common Standard..... 70¢
Standard..... 60¢
Extra..... 50¢
N. Y. B. & P. Co., Carbon..... 60¢
N. Y. B. & P. Co., Diamond..... 50¢
N. Y. B. & P. Co., Para..... 40¢

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..... 15¢
Detroit Perfected Tire Bender..... 15¢

Bits—

Auger, Gimlet, Bit Stock, Drills, &c.,
see Augers and Bits.
Bit Holders—See Holders.

Blind Adjusters—See Adjusters,

Blind.
Blind Fasteners—See Fasteners,
Blind.
Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1890..... 60¢
Cleveland Block Co., Mal. Iron..... 50¢
Moore's Novelty, Mal. Iron..... 50¢

Boards, Stove.

Wood Lined "Crystal"..... 50¢
"Embossed"..... 50¢
"Oxidized"..... 50¢
Paper Lined Zinc..... 55¢
"Crystal"..... 55¢
"Oxidized"..... 55¢

Boils—

Carriage, Machine, &c.—
Com. list June 10, '84..... 75¢
Genuine Eagle, list Oct. '84..... 75¢
Phila. pattern, list Oct. '84..... 80¢
R. B. & W., old list..... 70¢
Machine, list Jan. 1, 1890..... 75¢

Bolt Ends, list Jan. 1, 1890..... 75¢
75¢
75¢

Door and Shutter—

Cast Iron Barrel, Square, &c..... 70¢
Cast Iron Shutter Bolts..... 70¢
Cast Iron Chain (Sargent's list)..... 65¢
Ives' Patent Door Bolts..... 60¢

Wrought Barrel..... 70¢
Wrought Square..... 70¢
Wrt Shutter, all Iron, Stanley's..... 60¢
Wrt Shutter, Brass Knob..... 40¢
Wrt Shutter, Sargent's list..... 60¢
Wrt Shank Bolt, Sargent's list..... 55¢
Wrt Sunk Flush Stanley's list..... 50¢
Wrt B.K. Flush Com'n..... 55¢

Stove and Plow—

Stove..... 60¢
Plow..... 60¢
R. B. & W., Plow..... 55¢

Common, list Feb. 28, '83..... 65¢

Port Chester Bolt and Nut Company..... 65¢
Empire, list Feb. 28, '83..... 65¢
Keystone, Philadel., list Oct. '84..... 80¢
Norway, Phila., list Oct. '84..... 75¢

American Screw Company:

Norway, Phil., list Oct. 16, '84..... 75¢
Eagle, Phil., list Oct. 16, '84..... 80¢
Philadel., list Oct. 16, '84..... 80¢
Bay State, list Feb. 28, '83..... 65¢
R. B. & W., Philadel., list Oct. 16, '84..... 80¢

Borers, Tap.

Common and Kind..... 50¢
Ives' Tap Borer..... 35¢
Eagle Mfg. Co..... 35¢
Clark's..... 35¢

Borax.

Boring Machines—See Machines,
Boring.
Bow Pins—See Pins, Bow.

Boxes, Wagon.

Boxes..... 25¢
American Bit Brace Co.:
Nos. 10, 12, 20..... 60¢
Nos. 11, 21, 24, 27..... 70¢
Nos. 22, 25, 28..... 60¢
Nos. 13, 26, 36, 37..... 70¢
Bit Braces, net..... \$1.12 to \$1.25

Amidon's

Barker's Imp'd Plain..... 75¢
Barker's Imp. Nickeled..... 65¢
Ratchet..... 75¢
Eclipse Ratchet..... 60¢
Globe Jawed..... 40¢
Tommy Bar..... 40¢
Universal, 8 in., \$2.10 to \$2.25..... 82¢
Buffalo Ball..... \$1.10 to \$1.15

Barber's

Nos. 10 to 16..... 50¢
Nos. 30 to 33..... 50¢
Nos. 40 to 63..... 60¢

Sargent's

Barker's Imp. Polished..... 75¢
Barker's Imp. Nickeled..... 65¢
Ratchet, Polished..... 50¢
Ratchet, Nickeled..... 40¢
Buffalo Ball..... net, \$1.10 to \$1.15

Bartholomew's

Nos. 25, 27 and 30..... 50¢
Nos. 117, 118, 119..... 70¢
Common Ball, American..... \$1.00 to \$1.10
Fray's Genuine Spotted's..... 50¢
Fray's No. 70 to 120, 31 to 123, 207 to 414..... 60¢

Ives' New Haven Novelty..... 70¢

New Haven Ratchet..... 60¢
Barber Ratchet..... 60¢
Barbers..... 60¢
Spotted's Ratchet..... 60¢
Oswood's Ratchet..... 40¢
P. S. & W. Co., Peck's Patent..... 60¢

Brackets—

Shelf plain, Sargent list, 55¢ to 55¢
Shelf, fancy, Sargent's list, 60¢ to 60¢
Reading, plain..... 50¢
Reading, Rosette..... 60¢

Bright Wire Goods—See Wire.

Hen's Self, 1 inch..... 9 10 9 11
Basting, 1/2 per doz..... 5 50 5 50
New Haven..... 60¢
Wire Goods Co..... 65¢

Buckets, Well.

Galvanized—

Hill's..... \$ dos, 12 qt, \$4.25; 14 qt, \$5.25
Iron Clad..... \$ dos, 14 qt, \$4.25 to \$4.50
Helwig's Flat Iron Band..... \$3.75
Helwig's Wired Top..... \$ dos \$4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers

Butchers'.

Butts—

Brass—

Wrought Brass..... 75¢
Cast Brass, Tiebout's..... 60¢
Cast Brass, Corbin's, Fast..... 35¢
Cast Brass, Loose Joint..... 35¢

Cast Iron—

Fast Joint, Narrow..... 60¢
Fast Joint, Broad..... 60¢
Loose Joint..... 60¢
Loose Joint, Japanned..... 60¢
Loose Joint, Jap. with Acorns..... 60¢
Parliament Butts..... 70¢
Mayer's Hinges..... 70¢
Loose Pin, Acorn..... 70¢
Loose Pin, Acorn, Japanned..... 70¢
Loose Pin, Acorn, Japanned..... 70¢
Plated Tips..... 70¢

Wrought Steel—

Fast Joint, Narrow..... 60¢
Fast Joint, Lt. Narrow..... 60¢
Fast Joint, Broad..... 70¢
Table Butts, Back Flaps, &c..... 75¢
Inside Blind, Regular..... 70¢
Inside Blind, Light..... 70¢
Loose Pin..... 50¢
Bronzed Wrought Butts..... 50¢

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt..... 54¢
Burke's, One Prong, Blunt..... 54¢
Burke's, Two Prong, Blunt..... 74¢
Burke's, One Prong, Sharp..... 64¢

Can Openers—See Openers, Can.

Cards—List January 23, 1891.

Watson's Cotton, Wool, Horse and
File..... 25¢

Carpet Stretchers—See Stretchers

Carpet.

Carpet Sweepers—See Sweepers

Carpet.

Cartridges—See Ammunition.

Casters—

Bed..... \$55 to \$55
Shallow Socket..... \$60 to \$60
Deep Socket..... 40¢
Yale Casters, list May, 1884..... 30¢
Yale, Gem..... 60¢
Martin's Patent (Phoenix)..... 45¢
Fayson's Anti-friction..... 60¢
Giant Truck Casters..... 30¢
Stationary Truck Casters..... 60¢
Socket Truck Casters..... 60¢

Cattle Leaders—See Leaders, Cat-

tle.

Cement.

Victor Elastic..... 5 m pails \$ 5

Chain—

Trace, Wagon and Fancy Chains,
List revised April 21, 1890..... 50¢
American Coll. in cash lots,
3-16 1/4 5-16 3/4 7-16 1/2 9-16 1/4
\$7.75 5.45 4.55 4.00 3.65 3.50 3.40 3.30
Less than cash lots, add 1/4¢ per lb.
German Coll., list Oct. 6, 1890..... 50¢

German Halter Chain, list Oct. 6, 1890..... 50¢

Covert Halter..... 50¢
Covert Traces..... 35¢
Covert Heel Chain..... 50¢
Oneda Halter Chain..... 60¢
Galvanized Pump Chain..... 75¢
Jack Chain, Iron..... 75¢
Jack Chain, Brass..... 75¢

Chalk—

White..... \$ gr 50¢
Red..... \$ gr 70¢
Blue..... \$ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.
P. S. & W..... 75¢
New Haven..... 75¢
Witherby..... 75¢
Mix..... 75¢
Ohio Tool Co..... 75¢

Douglas..... 75¢

Buck Bros..... 30¢
Merrill..... 30¢
L. & I. J. White..... 30¢

Tanged and Miscellaneous.

Tanged Firmers..... 40¢
Butchers'..... \$4.75 to \$5.00
Spear & Jackson's..... \$5 to \$5
Buck Bros..... 30¢
Cold Chisels..... 15¢

Chucks—

Beach Pat. each, \$8.00, 20%	
Morse's Adjustable, each, \$7.00, 20%	
Danbury, each, \$8.00, 30%	
Yracuse, Ball Pat., 25%	
Graham Patent, 33%	
Skinner's Patent Chucks, 33%	
Combination Lathe Chucks, 33%	
Universal Lathe Chucks, 40%	
Independent Lathe Chucks, 40%	
Drill Chucks, 15%	
Union Mfg. Co., 25%	
Victor, 25%	
Combination, 40%	
Universal, 40%	
Independent, 40%	

Churns.

Tiffin Union, each, 5 gal. \$3.25; 7 gal. \$3.75; 10 gal. \$4.25.	
McDermald Star Barrel Churn, each, 6 gal. \$2.60; 10 gal. \$2.75; 15 gal. \$3.00; 20 gal. \$3.25.	

Clamps—

R. I. Tool Co.'s Wrought Iron, 25%	
Adjustable, Cincinnati, 15%	
Adjustable, Hammers, 15%	
Adjustable, Stearn's, 30%	
Stearns' Adjustable Cabinet and Corner, 30%	
Cabinet, Sargent's, 60%	
Carriage Makers', Sargent's, 70%	
Carriage Makers', P. S. & W. Co., 40%	
Eberhard Mfg. Co., 40%	
Warner's, 40%	
Saw Clamps, see Vises, Saw Filers.	
Carpenters', Cincinnati, 25%	

Cleaners.

Butchers', 25%	
Bradley's, 25%	
L. & J. White, 20%	
Beatty's, 40%	
New Haven Edge Tool Co.'s, 40%	
P. S. & W. Co., 30%	
Foster Bros., 30%	
Schulte, Lohoff & Co., 40%	

Clips—

Norway, Axle, 1/4 & 5-16, 55%	
Standard Norway Axle, 1/4 & 5-16, 65%	
Superior Axle Clips, 60%	
Norway Spring Bar Clips, 5-16, 60%	
Wrought-Iron Felloe Clips, 50%	
Steel Felloe Clips, 50%	
Baker Axle Clips, 25%	

Cloth and Netting, Wire—See Wire, &c.**Cocks, Brass.**

Hardware List, 50%	
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Coffee Mills—See Mills, Coffee.**Collars, Dog, &c.**

Medford Fancy Goods Co., 40%	
Embossed, Gift, Pope & Steven's List, 30%	
Leather, Pope & Steven's List, 40%	
Brass, Pope & Steven's List, 40%	
Chapman Mfg. Company, 50%	

Combs, Curry.

Fitch's, 60%	
Rubber, per doz \$10.00, 50%	
Perfect, 50%	

Compasses, Dividers, &c.—

Compasses, Callipers, Dividers, 70%	
Bemis & Call Co.'s, 70%	
Dividers, 60%	
Compasses & Callipers, 50%	
Wing and Inside or Outside, 50%	
Double, 30%	
(Call's Pat. Inside), 30%	
Excelsior, 50%	
J. Stevens & Co.'s, 25%	
Starrett's, 25%	
Spring Callipers and Dividers, 25%	
Lock Callipers and Dividers, 25%	
Combination Dividers, 25%	

Coopers' Tools—See Tools, Coopers.**Cord—**

Sash, 25%	
Common, 10%	
Patent, good quality, 13%	
White Cotton Braided, fair, 25%	
Common Russia Sash, 13%	
Patent, 15%	
Cable Laid Italian Sash, 22%	
Indian Cable Laid, 13%	
Silver Lake, 10%	
A Quality, White, 50%	
B Quality, White, 50%	
C Quality, White, 50%	
D Quality, White, 50%	
E Quality, White, 50%	
F Quality, White, 50%	
G Quality, White, 50%	
H Quality, White, 50%	
I Quality, White, 50%	
J Quality, White, 50%	
K Quality, White, 50%	
L Quality, White, 50%	
M Quality, White, 50%	
N Quality, White, 50%	
O Quality, White, 50%	
P Quality, White, 50%	
Q Quality, White, 50%	
R Quality, White, 50%	
S Quality, White, 50%	
T Quality, White, 50%	
U Quality, White, 50%	
V Quality, White, 50%	
W Quality, White, 50%	
X Quality, White, 50%	
Y Quality, White, 50%	
Z Quality, White, 50%	

Corkscrews—See Screws, Cork.**Corn Knives and Cutters—See Knives, Corn.****Crackers, Nut—**

Table (H. & B. Mfg. Co.), 40%	
Blake's Pattern, 40%	
Turner & Seymour Mfg. Co., 50%	

Cradles—

Grain, 50%	
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Crayons.

White Crayons, 12% doz, 12%	
D. M. Stewart Mfg. Co., Metal Work, 25%	
D. M. Stewart Mfg. Co., Rolling Mill, 25%	
See also Chalk, 25%	
Crow Bars—See Bars, Crow.	
Curry Combs—See Combs, Curry.	
Curtain Pins—See Pins, Curtain.	

Cutters—

<i>Meat.</i>				
Dixon's # doz.....				40¢5%
Nos. .. 1	2	8	4	
	\$14.00	\$17.00	\$19.00	30.00
Woodruff's # doz				40¢5%
Nos.....		100	150	

Roggin's Latches.....\$ doz 30¢@35¢
 Bronze Iron Drop Latches...\$ doz 70¢ net
 Jap'd Store Door Handles—Nuts, \$1.02;
 Plate, \$1.10; no Plate, \$0.88... net
 Barn Door, \$ doz \$1.40..... 10¢10¢
 Chest and Lifting.....70¢

Wood—

Saw and Plane.....40¢10¢40¢10¢5¢
 Hammer, Hatchet, Axe, Sledge, &c.....40¢
 Brad Axl.....\$ gr 5.00
 Hickory Firmer Chisel, ass'd.....\$ gr 5.00
 Hickory Firmer Chisel, large.....\$ gr 5.00
 Apple Firmer Chisel, ass'd.....\$ gr 5.00
 Apple Firmer Chisel, large.....\$ gr 5.00
 Socket Firmer Chisel, ass'd.....\$ gr 5.00
 Socket Firmer Chisel, large.....\$ gr 5.00
 J. S. Smith & Co.'s Pat File.....50¢
 File, assorted.....\$ gr 5.00
 Auger, large.....\$ gr 5.00
 Auger, large.....\$ gr 7.00
 Pat. Auger, Ives.....\$ doz 10¢
 Pat. Auger, Douglas.....\$ set \$1.25
 Pat. Auger, Swan's.....\$ set \$1.00
 Hoe, Rake, Shovel, &c.....50¢10¢

Hangers—

Barn Door, old patterns.....60¢10¢10¢70¢
 Barn Door, New England.....60¢10¢10¢70¢
 Samson Steel Anti-Friction.....55¢
 Orleans Steel.....55¢
 Hamilton Wrought Wood Track.....55¢
 U. S. Wood Track.....55¢
 Champion.....60¢10¢
 Rider and Wooster, Medina Mfg. Co.'s
 List.....70¢
 Climax Anti-Friction.....55¢
 Climax Anti-Friction for Wood Track.....55¢
 Zenith for Wood Track.....55¢
 Reed's Steel Arm.....50¢
 Challenge, Barn Door.....50¢
 Sterling.....50¢50¢10¢
 Victor, No. 1, \$15.00; No. 2, \$16.50; No.
 3, \$18.00.....50¢2¢
 Cheritree.....50¢10¢
 Kilder's.....50¢10¢
 The Boss.....50¢10¢
 Best Anti-Friction.....60¢10¢
 Duplex (Wood Track).....60¢10¢5¢
 Terry's Pat., \$ doz pr. 4 in, \$10.00; 5 in,
 \$12.00.....50¢10¢
 Terry's Steel Anti-Friction Leader.....50¢10¢
 Terry's Steel Anti-Friction Ideal.....50¢10¢
 Cronk's Patent Steel Covered.....50¢5¢
 Wood Track Iron Clad, \$ ft. 10¢.....50¢
 \$12.00.....50¢10¢
 Carrier Steel Anti-Friction.....50¢10¢
 Architect, \$ set \$6.00.....20¢
 Eclipse.....20¢10¢
 Felix, \$ set \$4.50.....20¢
 Richards.....20¢
 Lane's Standard.....50¢5¢5¢
 Lane's New Standard.....50¢5¢5¢
 Ball Bearing Door Hanger.....20¢10¢25¢10¢
 Warner's Pat.....20¢10¢20¢10¢10¢
 Stearns' Anti-Friction.....20¢10¢20¢10¢10¢
 Stearns' Challenge.....25¢10¢25¢10¢10¢
 Faultless.....40¢5¢5¢
 American, \$ set \$6.00.....50¢10¢
 Rider & Wooster, No. 1, \$2.45; No. 2,
 70¢.....40¢
 Paragon, Nos. 1, 2 and 3.....40¢10¢
 Cincinnati.....25¢10¢
 Paragon, Nos. 5, 6, 7 and 8.....20¢10¢
 Crescent.....60¢5¢10¢
 Nickel Cast Iron and Steel.....50¢
 Nickel, Malleable Iron and Steel.....40¢
 Seranton Anti-Friction Single Strap.....35¢
 Wild West, 4 in. Wheel, \$15.00; 5 in.,
 Wheel, \$21.00.....45¢
 Star.....40¢10¢40¢10¢5¢
 Hay.....50¢5¢50¢10¢
 Barry, \$6.00.....50¢5¢
 Interstate.....50¢
 Magic.....45¢

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
 Blood's.....
 Hunt's.....
 Hurd's.....
 Mann's.....
 Peck's.....
 Underhill's.....40 & 10
 Buffalo Hammer Co.....50¢5¢
 Fayette R. Plumb.....
 C. Hammond & Son.....
 Kelly's.....
 Sargent & Co.....
 P. S. & W. Co.....
 Ten Eyck Edge Tool Co.....10¢
 Collins.....
 Schulte, Lohoff & Co.....50¢50¢5¢

Hay and Straw Knives—See

Knives.

Hinges—

Blind Hinges—
 Parker.....75¢2¢
 Palmer.....50¢5¢10¢
 Beymour.....70¢2¢
 Huffer.....50¢
 Clark's, Nos. 1, 2, 3, 4 and 50.....75¢10¢5¢80¢
 Clark's Mortise Gravity.....60¢
 Sargent's, Nos. 1, 3, 5, 11, 13.....75¢10¢55¢10¢5¢
 Reading's Gravity.....75¢10¢75¢10¢5¢
 Shephard's.....75¢10¢
 Noisless.....80¢
 Niagara.....80¢
 Buffalo.....80¢
 Clark's Genuine Pattern.....80¢
 O. S., Lull & Porter.....75¢10¢
 Acme, Lull & Porter.....75¢
 Queen City Reversible.....70¢10¢5¢75¢
 Clark's Lull & Porter, Nos. 0, 1, 1 1/2,
 2, 2 1/2, 3.....75¢10¢2¢5¢
 4th's Automatic Blind Fixtures, No.
 2, for Wood, \$9.00; No. 3, for Brick,
 \$11.50.....10¢

Gate Hinges—

Western.....\$ doz \$4.40, 60¢
 N. E.....\$ doz \$7.00, 55¢
 N. E. Reversible.....\$ doz \$5.20, 55¢10¢
 Clark's, Nos. 1, 2, 3.....60¢10¢5¢
 W. Y. State.....\$ doz \$5.00, 55¢10¢
 Automatic.....\$ doz \$13.50, 50¢
 Common Sense.....\$ doz pair \$4.50, 50¢
 Seymour's.....45¢10¢
 Shepard's.....60¢10¢5¢
 Reed's Latch and Hinges.....\$ doz \$12.00,
 50¢

Spring Hinges—

Union Spring and Blank Butts.....40¢
 Year's Spring Hinge Co.'s List, March
 1890.....20¢

Acme.....30¢
 J. S.....25¢10¢
 Empire and Crown.....20¢
 Hero and Monarch.....55¢
 American, Gem, and Star.....20¢
 Oxford.....20¢
 Barker's Double Acting.....25¢
 Union Mfg. Co.....25¢
 Sommer's.....30¢
 Buckman's.....15¢20¢
 Chicago.....30¢
 Wiles.....10¢
 Devore's.....40¢
 Rex.....40¢
 Royal.....60¢
 Reliable.....60¢
 Champion.....40¢
 Bardley's Patent.....40¢
 Stearns.....50¢10¢
 Niagara, Holdback pattern, per
 gross.....\$14.00

Wrought Iron Hinges

List February 14, 1891.
 Strap and T.....50¢10¢
 Corrugated Strap and T.....50 & 10¢
 Screw Hook and (6 to 12 in., \$ 4¢
 14 to 20 in., \$ 3.5¢
 Strap.....\$ 3¢
 Screw Hook and Eye.....\$ 1/4 in., \$ 7 1/2¢
 \$ 1/2 in., \$ 10¢
 \$ 3/4 in., \$ 12 1/2¢
 \$ 1 in., \$ 15¢

toiled Blind Hinges, Nos. 32 and 34.....50¢10¢
 Rolled Blind Hinges, Nos. 232 and 234.....50¢10¢
 Rolled Plate.....70¢10¢
 Rolled Raised.....70¢10¢
 Plate Hinges (8, 10 & 12 in., \$ 5¢
 "Providence" } over 12 in., \$ 4¢

Hoops—

Eye—
 D. & H. Scovill.....20¢
 Lane's Crescent Planter Pattern.....45¢5¢
 Lane's Razor Blade, Scovill Pattern.....25¢
 Maynard, S. & O. Pat.....45¢5¢
 Sandusky Tool Co., S. & O. Pat.....50¢10¢5¢
 Am. Axe and Tool Co., S. & O. Pat.....60¢
 Pat.....\$ 6¢
 Chattanooga Tool Co., S. & O. Pat.....60¢10¢
 Grub.....50¢10¢

Handled—

Garden, Mortar, &c.....65¢5¢5¢10¢
 Planter's, Cotton &c.....65¢5¢5¢10¢
 Warren Hoe.....\$2.00
 Magic.....\$ doz \$4.00

Hog Rings and Hangers—See

Rings and Ringers.

Hoisting Apparatus—See

Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag,
 Sprengle's Pat.....\$ doz \$18.....60¢
 Bit,
 Extension,
 Barber's, \$ doz \$15.00.....40¢40¢10¢
 Ives, \$ doz \$20.00.....60¢5¢60¢10¢
 Diagonal.....\$ doz \$24.00, 40¢
 Angular.....\$ doz \$24.00, 40¢5¢

File and Tool—

Bals Pat.....\$ doz \$4.00; 25¢
 Nicholson File Holders.....20¢
 Dick's Tool Holder.....20¢

Hooks—

Cast Iron—
 Bird Cage, Sargent's List.....60¢10¢10¢
 Bird Cage, Reading.....60¢10¢10¢
 Clothes Line, Sargent's List.....60¢10¢10¢
 Clothes Line, Reading List.....60¢10¢10¢
 Ceiling Sargent's List.....55¢10¢10¢
 Harness, Reading List.....55¢10¢55¢10¢10¢
 Coat and Hat, Sargent's List.....55¢10¢60¢10¢
 Coat and Hat, Reading.....50¢10¢50¢10¢10¢
 Wrought Iron—
 Cotton.....\$ doz \$1.25
 Cotton Pat. (N.Y. Mallet & Handle W'ksh.).....30¢
 Tassel and Picture (T. & S. Mfg. Co.).....50¢
 Wrought Staples, Hooks, &c.....See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, List April,
 1880.....60¢
 Wire Coat and Hat, Miles, List April,
 1880.....60¢
 Indestructible Coat and Hat.....45¢
 Wire Coat and Hat, Standard.....60¢
 Handy Hat and Coat.....50¢10¢
 Steady Ceiling Hooks.....50¢10¢
 Belt.....50¢5¢10¢
 Atlas, Coat and Hat.....60¢

Miscellaneous.

Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50
 Noll's Grass.....\$ doz \$2.25
 Bush.....55¢60¢
 Whiffetree—Patent.....55¢
 Hooks and Eyes—Malleable Iron.....70¢70¢10¢
 Hooks and Eyes—Brass.....60¢10¢10¢
 Fish Hooks, American.....50¢
 Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75¢75¢5¢
 Standard.....60¢10¢5¢60¢10¢10¢
 Extra.....40¢10¢5¢
 N. Y. B. & P. Co., Para.....25¢5¢
 N. Y. B. & P. Co., Extra.....10¢40¢5¢
 N. Y. B. & P. Co., Dundee.....0¢10¢ 60¢

Huskies—

Blair's Adjustable.....\$ gr \$8.00
 Blair's Adjustable Clipper.....\$ gr 7.00
 Hubbard's Solid Steel.....\$ gr 4.50

Indurated Fiber-Ware—See

Ware, Indurated Fiber.—

Irons.

Class—
 From 4 to 10, at factory.....\$ 100 2¢,
 \$2.30¢@2.40
 Self-Heating.....\$ doz \$9.00 net
 Self-Heating, Tailors.....\$ doz \$18.00 net
 Mrs. Pott's Irons.....50¢5¢
 Enterprise Star Irons.....50¢5¢
 XX Cold Handle Sad Irons.....50¢5¢

Ideal Irons new list.....50¢10¢50¢ & 10¢10¢
 Salamander Irons.....25¢
 R. B. Sad Irons, \$ 3.....\$ 34¢
 Combined Fluter and Sad Iron, \$ doz,
 \$15.00.....15¢
 Fox Reversible, Self-Fluter \$ doz \$24.00
 Chinese Laundry (N.E. Butt Co.) \$ 8 1/2¢, 15¢
 New England.....5¢, 15¢
 Mahony's Troy Pol. Irons.....25¢
 Sensible, List Jan. 91.....50¢10¢5¢
 Sensible Tailor's Irons.....33 1/2¢
 National Self-Heating.....30¢
 Soldering—
 Soldering Coppers.....\$ 22 @ 23¢
 Cover's Adjustable, list Jan. 1, 1880.....35¢2¢

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....33 1/4¢
 Victor.....33 1/2¢

Kettles—

Brass, Round, Plate, list Jan. 1, '91, 75¢5¢
 Brass, Spun, Pld. W.M. list Jan. 1 '91 2¢
 Enameled and Tea—See Hollow Ware.

Keys—

Lock Ass'n list Dec. 30, 1886.....50¢10¢
 Eagle, Cabinet, &c.....33 1/2¢2¢
 Hotchkiss' Brass Blank.....40¢
 Hotchkiss, Copper and Tinned.....40¢
 Hotchkiss' Pad. and Cab.....35¢
 Hatchet Bed Keys.....\$ doz \$4.00, 15¢
 Wollensak Tinned.....60¢10¢

Knife Sharpeners—See

Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—
 Wilson's Butcher Knives, list Oct. 1,
 1890.....25¢
 Ames' Butcher Knives.....25¢
 Porter Bros', Butcher, &c.....40¢
 Foster's AAAI, Butcher's, list.....net
 Nichols' Butcher Knives.....40¢10¢
 W. W. Wilson, Butcher, 8 in., \$2.40; 7
 in., \$2.70; 8 in., \$3.80, &c.....
 Ames' Shoe Knives.....20¢25¢
 Ames' Bread Knives, \$ doz \$1.50, 15¢20¢
 Moran's Shoe and Bread.....20¢
 Hay and Straw.....See Hay Knives.
 Table and Pocket.....See Cutlery.
 Corn, Auburn Mfg. Co. Western Pat.....\$2.00
 Corn, Auburn Mfg. Co. Crescent.....\$3.50

Corm—

Bradley's.....10¢
 Wadsworth's.....25¢

Draining—

Witherby.....
 P. S. & W.....\$.75 @ 75¢10¢ 1
 M.H.....
 New Haven.....
 Merrill.....60¢10¢60¢10¢5¢
 Douglas.....75¢75¢5¢
 Watrous.....15¢10¢25¢
 L. & J. White.....20¢5¢
 Bates.....25¢30¢
 Adjustable Handle.....35¢
 Wilkinson's Folding.....25¢25¢5¢

Hay and Straw—

Lightning, Mfrs'. price \$ doz \$18.00, 25¢
 But jobbers cut this price freely,
 often selling at \$8 @ \$5.50.
 Wadsworth's.....40¢7¢40¢10¢
 Carter's Needle.....\$ doz \$11.00¢11.50
 Heath's.....\$ doz \$13.00@13.50
 Auburn Hay, Com. and Spear Point.....50¢
 Auburn, Straw.....40¢
 Noll's Hay.....\$ doz \$7.00 @ \$8.00

Mincing.

Am. (2d quality), \$ gr. 1 blade, \$7;
 2 blades, \$12; 3 blades, \$18.....net
 Lathrop's.....20¢10¢
 Smith's, \$ doz, single, \$2.00; Double, \$3
 40¢45¢
 Knapp & Cowles.....50¢10¢60¢
 Buffalo Adjustable.....\$ doz \$3.00 25¢
 Buffalo Double Adj'table, \$ doz \$3.00 25¢

Knobs—

Door Mineral.....60¢65¢
 Door Por. Jap'd.....70¢75¢
 Door Por. Nickel.....\$2.00¢2.25
 Door Por. Plated, Nickel.....\$2.00¢2.25
 Drawer, Porcelain.....60¢10¢60¢10¢10¢
 Hemacite Door Knobs.....40¢10¢50¢
 Yale & Towne Wood, list Dec. 1885.....40¢
 Furniture, Plain.....75¢ gr inch, 10¢
 Furniture, Wood Screws.....25¢10¢
 Base, Rubber Tip.....60¢10¢10¢
 Picture, Judd's.....60¢10¢10¢75¢
 Picture, Sargent's.....70¢10¢
 Picture, Hemacite.....55¢5¢
 Shutter, Porcelain.....65¢10¢
 Carriage, Jap.....\$ gr 80¢, 60¢10¢
 Bardley's Wood Door, Shutter, &c. 40¢

Ladies.

Melting, Sargent's.....55¢10¢
 Melting, Reading.....55¢10¢
 Melting, Monroe's Pat.....\$ doz \$4.00, 40¢
 Melting, P. S. & Shield.....55¢10¢5¢
 Melting, Warner's.....80¢

Lanterns.

Plain with Guards, \$ doz.....\$3.75
 Lift Wire, with Guards.....\$4.00
 Square Plain, with Guards.....\$3.75
 S. Lift Wire, with Guards.....\$4.50
 Without Guards, 25¢ \$ doz less.

Police Lanterns (including packages).

2 1/2-inch Bull's-eye Police regular.....\$ doz \$3.90
 3-inch Bull's-eye Police regular.....\$ doz \$3.90
 2 1/2-inch Bull's-eye Police flash light.....\$ doz \$4.00
 3-inch Bull's-eye Police flash light.....\$ doz \$4.50

Lawn Mowers—See Mowers, Lawn

Leaders, Cattle.

Humason, Beckley & Co.'s.....70¢
 Sargent's.....60¢10¢
 Hotchkiss.....30¢
 Peck, Stow & W. Co.....60¢10¢

Lemon Squeezers—See

Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
 Class 3 and 4, Bronzed Iron.....50¢
 Class 3 and 4, Bronze Metal.....25¢
 Class 3 and 4, Brass.....25¢
 Skylight Lifters.....35¢
 Crown, Base and Shield.....50¢5¢
 Reither's, list Feb. 20, 1891.....50¢5¢
 Bronzed Iron Rods.....50¢10¢10¢2¢
 Brass, Real Bronze or Nickel Plate 30¢

Excelsior.....50¢10¢2¢
 Shaw's.....50¢10¢
 Payson's:
 Universal.....80¢
 Solid Grip.....60¢
 Imperial.....50¢10¢

Lines—

Cotton and Linen Fish, Draper's.....50¢
 Draper's and Tate's Chalk.....80¢
 Draper's Mason's Linen, 5 1/2 ft., No. 1,
 \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4,
 \$2.75; No. 5, \$3.25.....25¢
 Cotton Chalk.....55¢
 Samson, Cotton, No. 4, \$2; No. 4 1/2, \$2.50;
 10¢

Silver Lake, Braided, No. 1, \$6.00; No.

1, \$6.50; No. 2, \$7.00; No. 3, \$7.50 \$ gr.
 Mason's Linen, No. 3 1/2, \$1.50; No. 4,
 \$2.00; No. 4 1/2, \$2.50.....45¢
 Mason's Colored Cotton.....45¢
 Wire Clothes.....Nos. 1, 19 30
 100 ft.....\$.00 \$3.50 \$3.00

Ventilator, Corb. Samson Braided,

White or Drab Cotton, \$ doz \$7.50, 20¢

Locks, &c.—

Cabinet—
 Eagle, Gaylord Par' List March, '84, rev
 ker and Corbin.....Jan. 1, '85, 33 1/2¢2¢
 Delta, Nos. 36 to 39.....40¢
 Delta, Nos. 51 to 63.....40¢10¢
 Delta, Nos. 86 to 90.....30¢
 Stoddard Lock Co.....30¢33 1/2¢
 "Champion" Night Latches.....40¢
 Barnes Mfg. Co.....40¢40¢10¢
 Eagle and Corbin Trunk.....55¢5¢
 "Champion" Cab. and Combin.....33 1/2¢
 Yale.....net prices
 Romer's.....25¢

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20,
 1890.....60¢5¢
 Mallory, Wheeler & Co., list
 July, '88.....lower net
 Sargent & Co., list Aug. 1, '88
 Reading Hardware Co., list
 Feb. 2, '88.....prices
 often
 made.
 Brittan, Graham & Mathes, list Jan.
 1890.....60¢10¢10¢
 Perkins' Burglar Proof.....60¢25¢
 Barnes Mfg. Co.....33 1/2¢
 Yale.....net prices
 Delta Flat Key.....30¢
 L. & C. Round Key Latches.....30¢10¢
 L. & C. Flat Key Latches.....33 1/2¢10¢
 Romer's Night Latches.....15¢
 Shephardson or U. S.....35¢
 Seed's N. Y. Hasp Lock.....25¢

Padlocks—

List Dec. 23, '84.....75¢10¢
 Brittan, Graham & Mathes.....75¢10¢
 Yale Lock Mfg. Co.'s.....net prices
 Eagle.....35¢
 Eureka, Eagle Lock Co.....40¢2¢
 Romer's, Nos. 6 to 91.....40¢40¢10¢
 Romer's Scandinavian, &c., Nos. 100 to
 606.....15¢
 A. E. Deltz.....40¢
 Champion Padlocks.....40¢
 Hotchkiss.....40¢
 Star.....45¢
 Horseshoe.....\$ doz \$3, 40¢40¢10¢
 Barnes Mfg. Co., up to No. 150.....40¢
 No. 150 to 300.....30¢
 No. 300 to 400.....25¢
 No. 400 to 500.....20¢
 No. 500 to 600.....15¢
 No. 600 to 700.....10¢
 No. 700 to 800.....5¢
 No. 800 to 900.....5¢
 No. 900 to 1000.....5¢
 No. 1000 to 1100.....5¢
 No. 1100 to 1200.....5¢
 No. 1200 to 1300.....5¢
 No. 1300 to 1400.....5¢
 No. 1400 to 1500.....5¢
 No. 1500 to 1600.....5¢
 No. 1600 to 1700.....5¢
 No. 1700 to 1800.....5¢
 No. 1800 to 1900.....5¢
 No. 1900 to 2000.....5¢
 No. 2000 to 2100.....5¢
 No. 2100 to 2200.....5¢
 No. 2200 to 2300.....5¢
 No. 2300 to 2400.....5¢
 No. 2400 to 2500.....5¢
 No. 2500 to 2600.....5¢
 No. 2600 to 2700.....5¢
 No. 2700 to 2800.....5¢
 No. 2800 to 2900.....5¢
 No. 2900 to 3000.....5¢
 No. 3000 to 3100.....5¢
 No. 3100 to 3200.....5¢
 No. 3200 to 3300.....5¢
 No. 3300 to 3400.....5¢
 No. 3400 to 3500.....5¢
 No. 3500 to 3600.....5¢
 No. 3600 to 3700.....5¢
 No. 3700 to 3800.....5¢
 No. 3800 to 3900.....5¢
 No. 3900 to 4000.....5¢
 No. 4000 to 4100.....5¢
 No. 4100 to 4200.....5¢
 No. 4200 to 4300.....5¢
 No. 4300 to 4400.....5¢
 No. 4400 to 4500.....5¢
 No. 4500 to 4600.....5¢
 No. 4600 to 4700.....5¢
 No. 4700 to 4800.....5¢
 No. 4800 to 4900.....5¢
 No. 4900 to 5000.....5¢
 No. 5000 to 5100.....5¢
 No. 5100 to 5200.....5¢
 No. 5200 to 5300.....5¢
 No. 5300 to 5400.....5¢
 No. 5400 to 5500.....5¢
 No. 5500 to 5600.....5¢
 No. 5600 to 5700.....5¢
 No. 5700 to 5800.....5¢
 No. 5800 to 5900.....5¢
 No. 5900 to 6000.....5¢
 No. 6000 to 6100.....5¢
 No. 6100 to 6200.....5¢
 No. 6200 to 6300.....5¢

Shepard Hand Fluter, No. 110 # dos \$11.00.....40%
 Shepard Hand Fluter, No. 95 # dos \$5.00.....40%
 Clark's Hand Fluter # dos \$15.00.....35%
 Combined Fluter and Sad Iron, # dos \$15.00.....30%
 Buffalo # dos \$10.00.....10%
Holsting.
 Moore's Hand Holst, with Lock # dos \$20.00.....20%
 Moore's Differential Pulley Block.....40%
 Energy Mfr. Co's.....25%
Washing.
 Anthony Wayne, # dos No. 1, \$51; No. 2, \$16; No. 3, \$12
Mallets.
 Hickory.....20%
 Lignumvite.....20%
 B. & L. Block Co., Hickory & L. V. # dos \$30.00.....30%
Mattocks, Regular list.
 60%
Measures.
 Standard Fiberware, No. 1, peck, # dozen, \$4; 1/2 peck, \$3.50.
Meat Cutters—See Cutters, Meat.
Mills.
Coffee.
 Box and Side, List Jan. 1, 1888.....60%
 American, Enterprise Mfg Co. 20%
 The Swift, Lane Bros.....30%
Mining Knives—See Knives, Mining.
Mellasses Gates—See Gates, Molasses.
Money Drawers—See Drawers, Money.
Mowers, Lawn.
 Pennsylvania, New Model, Excelsior, Continental, &c.....60%
 Philadelphia.....60%
 Other Machines.....60%
Muzzles.
 Safety.....# dos, \$3.00, 25%
Nails.
 Cut and Wire. See Trade Report.
 Wire Nails, Papered.
 Association list, July 15, '89.....75%
 Tack Mfrs' list.....70%
 Wire Nails, Standard Penny.
 Card June 1, '89, base.....\$2.35 @ \$2.50
Horse.
 Nos. 6 7 8 9 10
 Available.....28% 26% 25% 24% 23%
 Clinton, Fin. 19% 17% 16% 15% 14%.....30%
 Essex.....28% 26% 25% 24% 23%
 Lyra.....19% 17% 16% 15% 14%.....30%
 Snowden.....19% 17% 16% 15% 14%.....30%
 Putnam.....28% 26% 25% 24% 23%
 1000 lb in year 15%
 Vulcan.....23% 21% 20% 19% 18%.....20%
 Northwest.....23% 21% 20% 19% 18%.....20%
 Globe.....23% 21% 20% 19% 18%.....20%
 Boston.....23% 21% 20% 19% 18%.....20%
 A. C.....25% 23% 22% 21% 20%.....20%
 C. R. K.....25% 23% 22% 21% 20%.....20%
 Maud S.....25% 23% 22% 21% 20%.....20%
 Champlain.....28% 26% 25% 24% 23%.....20%
 New Haven.....28% 26% 25% 24% 23%.....20%
 Saranac.....23% 21% 20% 19% 18%.....20%
 Champion.....25% 23% 22% 21% 20%.....20%
 Capewell.....28% 26% 25% 24% 23%.....20%
 Star.....23% 21% 20% 19% 18%.....20%
 Anchor.....23% 21% 20% 19% 18%.....20%
 Western.....23% 21% 20% 19% 18%.....20%
 Empire Bronzed.....14%
Picture.
 Brass Head, Sargent's list.....50%
 Brass Head, Combination list.....50%
 Porcelain Head, Sargent's list.....50%
 Porcelain Head, Combination list.....50%
 Niles' Patent.....40%
Nail Pullers.—See Pullers, Nail.
Nail Sets.—See Sets, Nail.
Nut Crackers.—See Crackers, Nut.
 Nuts—List Dec. 18, 1889.
 Hot Pressed.....Square. Hex.
 Cold Punched.....5.40 5.00 off list.
 In packages of 100 lb. add 1-10¢ # 2 net; in packages less than 100 lb. add 1/4¢ # 2 net.
Oakum.
 Government.....# 7 @ 7 1/4
 U. S. Navy.....# 8 @ 8 1/4
 Navy.....# 9 @ 9 1/4
Oilers.
 Zinc and Tin.....65%
 Brass and Copper.....50%
 Malleable, Hammers' Improved, No. 1, \$3.00; No. 3, \$4.00; No. 5, \$4.40 # dos. 10 @ 10 1/2%
 Malleable, Hammers, Old Pattern, same list.....40%
 Prior's Pat. or "Paragon" Zinc.....60%
 Prior's Pat. or "Paragon" Brass.....50%
 Olmstead's Tin and Zinc.....50%
 Olmstead's Brass and Copper.....50%
 Broughton's Zinc.....60%
 Broughton's Brass.....50%
 Gem P. D. & Co.....# gro. 50%
 Steel, Draper and Williams.....50%
Openers, Can.
 Messinger's Comet.....# dos \$3.00, 25%
 American.....# gross \$3.00
 Duplex.....# dos \$4.15 @ 20%
 Lyman's.....# dos \$3.75, 20%
 No. 4 French.....# dos \$2.25, 55%
 No. 5, Iron Handle.....# gr \$4.00, 45%
 Eureka.....# dos \$2.50, 10%
 Sardine Sissors.....# dos \$2.75 @ 30%
 Star.....# dos \$2.75 @ 30%
 Sprague, No. 1, \$2.00 # 2, \$2.50 # 3, \$2.50 @ 10%
 Excelsior No. 1 \$2.50; No. 2, \$1.50.....4%

World's Best, # gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00.....50%
 Universal, # dos \$3.00.....65%
 Domestic, # dos \$2.50.....45%
 Champion # dos \$2.00.....45%
Packing, Steam—Rubber.
 Standard.....60%
 Extra.....60%
 N. Y. B. & P. Co., Standard.....50%
 N. Y. B. & P. Co., Empire.....60%
 N. Y. B. & P. Co., Salamander.....25%
 Jenkins' Standard, # 80¢.....25%
Miscellaneous.
 American Packing.....10%
 Russian Packing.....14%
 Italian Packing.....14%
 Cotton Packing.....15%
 Jute.....7%
Padlocks—See Locks.
Pails.
Galvanized Iron—Quarts 10 12 14
 Hill's Light Weight, # dos. \$2.75 3.00 3.25
 Hill's Heavy Weight, # da. 3.00 3.25 3.75
 Helwig's.....2.50 2.75 3.00
 Sidney Shepard & Co.....2.50 2.85 3.00
 Iron Clad.....2.50 2.75 3.00
 Fire Buckets.....2.75 3.25 3.50
 Buckets, see Well Buckets.
Indurated Fibre Ware—25¢
 Star Pails, 12 qt.....# dos \$2.00
 "Fire, Stable and Milk, 14 qt.....# dos \$2.50
Standard Fibre Ware—Plain, Dec'd
 Water Pails, 12 qt., per doz.....\$4.00
 Dairy Pails, 14 qt., per doz.....4.50
 Fire Pails, No. 1, 12 qt., per doz.....4.50
 Fire Pails, No. 2, 14 qt., per doz.....5.00
 Sugar Pails.....6.00 6.50
 Horse Pails.....5.00
 Buggy Pails.....4.00
 Slop Jars (bal. trap).....8.00 9.00
 Chamber Pails, 14 qt.....6.50 7.50
Pans.
Dripping.
 Small sizes.....# 6 1/2
 Large sizes.....# 5 1/2
 Silver & Co. (Covered).....40%
Fry.
 Standard List:
 No.....0 1 2 3 4
 # dos.....\$3.00 \$3.75 \$4.25 \$4.75 \$5.25
 # dos.....0 6 7 8
 # dos.....\$6.00 \$7.00 \$8.00 \$9.00
 Polished, regular goods.....70%
 Acme Fry Pans.....60%
Dust.
 Steel Edge, No. 1.....# dos \$1.75
Paper and Cloth—
Sand and Emery—
 List April 19, 1886.....50%
 Sibley's Emery and Crocus Cloth.....30%
Parers.
Apple.
 Advance.....# dos \$4.75
 Baldwin.....# dos 5.25
 Bonanza.....each 5.00
 Champion.....# dos 4.00
 Daisy.....each 7.50
 Eureka, 1888.....each 16.00
 Family Bay State.....# dos 12.00
 Favorite.....# dos 5.00
 Gem.....# dos 5.25
 Gold Medal.....# dos 4.00
 Improved Bay State.....# dos 4.00
 Ideal.....# dos \$7.00 @ 30.00
 Little Star.....# dos 4.50
 Monarch.....# dos 13.50
 New Lightning.....# dos 5.50
 Oriole.....# dos 4.00
 Penn.....# dos 4.00
 Perfection.....# dos 4.00
 Rocking Table.....# dos 0.00
 Turntable.....# dos 4.50
 Victor.....# dos 13.50
 Waverly.....# dos 4.00
 White Mountain.....# dos 4.25
 72.....# dos 5.75
 78.....# dos 6.50
Potato.
 White Mountain.....# dos \$4.50
 Antrim Combination.....# dos \$5.50
 Hoosier.....# dos \$13.50
 Saratoga.....# dos \$5.50
Pencils.
 Faber's Carpenters'.....high list 50%
 Faber's Round Gilt.....# gro \$5.25
 Dixon's Lead.....# gro \$4.50
 Dixon's Lumber.....# gro \$6.75
 Dixon's Carpenters'.....40%
Picks.
 Railroad or Adse Eye, 5 to 6, \$12.00; 6 to 7, \$15.00.....60%
Picture Nails.—See Nails, Picture.
Pinking Irons.—See Irons, Pinking.
Pins.
Bow.
 Humason, Beckley & Co's.....60%
 Sargent & Co's.....\$17 and \$18.....60%
 Peck, Stow & W Co.....60%
Curtain.
 Silvered Glass.....net
 White Enamel.....net
Escutcheon.
 Iron, list Nov. 11, 1885.....50%
 Brass.....60%
Pipe, Wrought Iron—
 List September 18, 1889.
 1 1/4 and under, Plain.....47%
 1 1/4 and under, Galvanized.....40%
 1 1/2 and over, Plain.....60%
 1 1/2 and over, Galvanized.....47%
 Boiler Tubes, Iron, all sizes.....50%
Planes and Plane Irons—
Wood Planes—
 Bonding.....35%
 Bench, First Quality.....50%
 Bench, Second Quality.....55%
 Bailey's (Stanley R. & L. Co.).....40%

Iron Planes—
 Bailey's (Stanley R. & L. Co.).....40%
Miscellaneous Planes (Stanley R. & L. Co.)
 Victor Planes (Stanley R. & L. Co.).....20%
 Steer's Iron Planes.....35%
 Merfien Mail Iron Co's.....40%
 Davie's Iron Planes.....50%
 Birmingham Plane Co.....50%
 Gage Tool Co's Self-Setting.....20%
 Chaplin's Iron Planes.....40%
 Sargent's.....30%
 Standard Tool Co.....50%
Plane Irons—
 Butcher's.....\$5.00 @ \$5.25 to 2
 Auburn.....30%
 Ohio.....35%
 Sandusky.....25%
 S. & J. White.....25%
Plates.
 Felloe.....# 5 @ 6 1/2
Pliers and Nippers—
 Button's Patent.....50%
 Hall's No. 2, 5 in., \$13.50; No. 4, 7 in., \$21.00 # dos.....20%
 Humason & Beckley Mfr. Co.....50%
 Lindsay's Giant.....40%
 Gas Pliers.....60%
 Gas Pliers, Custar's Nickel Plated.....60%
 Eureka Pliers and Nippers.....40%
 Russell's Parallel.....25%
 P. S. & W. Cast Steel.....50%
 P. S. & W. Tinnars' Cutting Nippers.....20%
 Carew's Pat. Wire Cutters.....20%
 Morrill's Parallel, # dos, \$12.00.....30%
 Cronk's 8 in., \$15.00; 10 in., \$21.00.....40%
Plumbs and Levels—
 Regular List.....70%
 Diston's.....50%
 Pocket Levels.....70%
 Davis Iron Levels.....30%
 Davis' Inclinoimeters.....10%
Ponchers.
Egg.
 Buffalo Steam Egg Poachers, # dos, No. 1, \$6.00; No. 2, \$9.00.....25%
 Silver & Co., 6-Ring, # dos \$4; 3-Ring \$2
Fish, Animal—
 Bishop's.....# dos \$6.00
 Bishop's O. K.....# dos \$5.25
 Bishop's Pioneer.....# dos \$3.75
 Bishop's American.....# dos \$2.75
 Eagle, Double Stale.....# dos \$5.75
 Eagle, Single Stale.....# dos \$3.75
 Buckeye, Single Stale.....# dos \$2.75
 R. I. Tool Co., Handcuffs, \$15.00 # dos 10%
 R. I. Tool Co., Leg Irons, \$25.00 # dos 10%
 Tower's.....25%
 Daley's Improved Handcuffs: 2 Hands, Polished, # dos \$48.00; Nickeled, \$57.00; 3 Hands, Polished, # dos \$22.00; Nickeled, \$34.00.....25%
 J. F. Lovell's Police Goods.....25%
Polish, Metal.
 Prestoline.....30%
 Prestoline Paste.....30%
 Gaston's Silver Compound.....30%
Polish, Stove.
 Joseph Dixon's.....# gro \$6.00, 10%
 Gold Medal.....# gro \$6.00, 25%
 Mirror.....# pro \$6.00, 1%
 Lustro.....# gro \$4.75
 Ruby.....# gro \$3.75
 Rising Sun, 5 gro lots.....# gro \$5.50
 Dixon's Plumbago.....# 8¢
 Norman's No. 1 Day, # gro.....13.00
 Parlor Fringe Stove Enamel.....gro
 Yates' Liquid, 2 3 4 10 gal.....# gal.....\$0.80 .70 .60 .50
 Yates Standard Paste Polish, 10-b cans, # gro \$4.12 1/2
 Jet Black.....# gro \$3.50
 Japanese.....# gro \$3.50
 Fireside.....# gro \$3.50
 Diamond O. K. Enamel.....# gro \$19.00
 Bonnell's Liquid Stove Polish.....# gro \$9.00
 Bonnell's Paste Stove Polish.....# gro \$6.00
 Black Eagle Benzine Paste, 5 and 10 lb cans.....12 1/2¢
 Black Jack Water Paste, 5 and 10 lb cans.....12 1/2¢
 Nickel Plate Paste.....# gro \$6.00
 Crown Paste.....# gross, \$7.20
 Crown Paste, in 5 and 10 lb pails.....# 12¢
 Black Flag.....# gross, \$7.20
 Black Flag, 5 and 10 lb pails.....# 12¢
 Black Flag, Liquid, in bottles, # gro.....\$8.00
Polypers.
 Round or Square, 1 qt., # gr \$10.00 @ 10.50
 Round or Square, 1 1/2 qt., # gr \$15.00 @ 15.50
 Round or Square, 2 qt., # gr \$18.50 @ 19.00
Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.
Potato Parers—See Parers, Potato.
Pots.
Glue.
 Tinned.....40%
 Enamelled.....40%
 Family, Howe's "Eureka".....40%
 Family, L. F. C.'s "Handy".....50%
Presses.
Fruit and Jelly—
 Enterprise Mfg. Co.....20%
 Hens.....# dos \$3.50
 Shepard's Queen City.....40%
 Silver & Co.....# dos \$2.75
Pruning Hooks and Shears.—
 See Shears.
Pullers.
 Scranton.....# dos \$18.00, 35%
 Curdiss Hammer.....# dos \$9.00
 Giant, No. 1.....# dos \$13.00, 10%
 Giant, No. 2.....# dos \$15.00, 10%
 Pelican.....# dos \$9.00, 25%
Pulleys.
 Hot House, Awning, &c.....60%
 Japanned Screw.....60%
 Brass Screw.....60%
 Japanned Side.....60%
 Japanned Clothes Line.....60%
 Empire Sash Pulley.....55%
 Moore's Sash, Anti-Friction.....50%
 Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50.....50%
 Hay Fork, "Anti-Friction" 5 in. Solid, \$5.70.....50%
 Hay Fork, "P" Common and Pat. Bushed.....20%
 Hay Fork, Tarbox Pat. Iron.....20%
 Hay Fork, Reed's Self-Lubricating.....60%
 Shade Block.....50%
 Tackle Blocks—See Blocks
 Moore's Anti-Friction 5 in. Wheel, # dos \$12.00.....40%

Pumps.
 Clister, Best Makers.....60%
 Pitcher Spout, Best Makers.....37%
 Pitcher Spout, Cheaper Goods.....70%
Punches.
 Saddlers' or Drive, good, # dos.....60%
 Bemis & Call Co's Cast Steel Drive.....50%
 Bemis & Call Co's Springfield Socket.....50%
 Spring, good quality.....# dos \$2.50 @ 2.60
 Spring, Leach's Pat.....15%
 Bemis & Call Co's Spring and Check.....40%
 Solid Tinnars' P. S. & W. Co. # dos \$14.44, 55%
 Tinnars' Hollow Punches P. S. & W. Co. # dos \$14.44, 55%
 Rice Hand Punches.....15%
 Avery's Revolving.....40%
 Avery's Saw-Set and Punch, See Saw Sets.
Rail.
 Sliding Door, Wrt Brass, # 35¢.....15%
 Sliding Door, Browned Wrt Iron.....# ft. 7¢
 Sliding Door, Iron, Painted, # foot 4¢, 40%
 Barn Door, Light-In.....# 100 feet.....\$2.00 2.50 3.10, 10%
 B. D. for N. E. Hangers.....Small, Med. Large.
 Per 100 feet.....\$2.15 2.70 3.25.net
 Terry's Steel Rail, # foot.....4¢
 Victor Track Rail, # foot.....50¢
 Carrier Steel Rail, # foot.....4¢
 Moore's Wrought Iron.....35%
Rakes.
 Cast Steel, Association goods.....60%
 Cast Steel, outside goods.....70%
 Malleable.....60%
 Gibbs Lawn Rake.....\$12.00, 50¢
 Canton Lawn Rake.....\$9.00, 50¢
 Ft. Madison Prize Bow Rake and Feet.....less
 Fort Madison Steel Tooth Lawn Rake, \$6.00.....25%
Razors.
 J. R. Torrey Razor Co.....20%
 Wostenholme and Butcher, \$10.00 to 2.....10%
 Jordan's A. A. I., list Nov. 1, 1880.....50%
 Jordan's Old Faithful, list Nov. 1, 1880.....50%
 Galvanic.....# dos \$15.00
Razor Straps—See Straps, Razor.
Rings and Ringers.
Full Rings.
 Union Nut Co.....55%
 Sargent's.....60%
 Hotchkiss' low list.....30%
 Humason, Beckley & Co's.....70%
 Peck, Stow & W. Co's.....50%
 Elrich Hdw. Co., White Metal, low list.....50%
Hog.
 Top of the Hill Ringers.....# dos \$2.00
 Top of the Hill Ringers.....# dos \$1.35
 Hill's Improved Ringers.....# dos \$1.25
 Hill's Old Style Ringers.....# dos \$1.12 1/2
 Hill's Tongs.....# dos \$3.00
 Hill's Rings.....# dos \$1.00
 Perfect Ringers.....# dos \$1.50
 Perfect Ringers.....# dos \$2.15 @ 2.25
 Blair's Hog Ringers.....# dos \$2.00
 Blair's Hog Ringers.....# dos \$2.00 @ 2.10
 Champion Ringers.....# dos \$2.00
 Champion Ringers, Double.....# dos \$2.25
 Brown's Ringers.....# dos \$2.00
 Brown's Ringers.....# dos \$1.50 @ 1.25
 Electric Hog Ringers.....# dos boxes 1.25
 Electric Hog Ringers.....# dos \$2.00
Rivets and Burrs.
 Iron, list Nov. 17, '87.....40%
 Copper.....50%
 Copper Iron, Betina Brand.....40%
Rivet Sets—See Sets.
Rods.
 Stair, Brass.....25%
 Stair, Black Walnut.....# dos 40%
Rollers.
 Barn Door, Sargent's list.....60%
 Acme Moore's Anti-Friction.....55%
 Union Barn Door Roller.....70%
Rope.
 Manila.....# 1/2 in. and larger.....# 11 1/2¢
 Manila.....# 1/2 in. and larger.....# 12¢
 Manila.....# 1/2 in. and larger.....# 13¢
 Manila Tarred Rope.....# 10 1/2¢
 Manila, Hay Rope.....# 11 1/2¢
 Sisal.....# 1/2 inch and larger.....# 7 1/2¢
 Sisal.....# 1/2 inch and larger.....# 8 1/2¢
 Sisal.....# 1/2 inch and larger.....# 9 1/2¢
 Sisal, Hay Rope.....# 7 1/2¢
 Sisal, Tarred Rope.....# 7 1/2¢
 Sisal, Medium Lath Yarn.....# 6 1/2¢
 New Zealand.....# 1/2 in. and larger.....# 7 1/2¢
 New Zealand.....# 1/2 in. and larger.....# 8 1/2¢
 New Zealand.....# 1/2 in. and larger.....# 9 1/2¢
 New Zealand, Hay Rope.....# 7 1/2¢
 New Zealand, Tarred Rope.....# 7 1/2¢
 Note.—Manufacturers' prices on above 1/2¢ # 2 less, f.o.b. factory.
 Cotton Rope.....# 13 1/2 @ 16¢
 Jute Rope.....# 13 1/2 @ 16¢
Wire.
 List May 1, 1889.
 Iron.....\$21 @ 23 1/2¢
 Iron, Galvanized.....40%
 Cast Steel.....40%
Rules.
 Boxwood.....80%
 Ivory.....60%
 Starrett's Rules and Straight Edges, Steel.....35%
Sad Irons—See Irons, Sad.
Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.
Sash Cord—See Cord, Sash.
Sash Locks—See Locks, Sash.
Sash Weights—See Weights, Sash.
Sausage Stuffers or Fillers—
 See Stuffers or Fillers, Sausage.
Saws.
 Diston's Circular.....45%
 Diastro's Cross Cuts.....45%
 Diston's Hand.....30%
 Woodrough & C. Parlin.....25%
 Hand, Panel and Rip.....25%
 Narrow Champion Cross Cuts with Handles, # foot.....20%
 Champion Thin Back Cross Cuts, # foot.....28%
 Champion Extra Thin Back Cross Cuts, # foot.....31%
 One Man Champion Cross Cuts, # foot.....40%
 Wheeler, Madden & Clemson Mfg. Co. Hand, Panel and Rip.....30%
 Narrow Champion Cross Cuts with Handles, # foot.....20%
 Champion Thin Back Cross Cuts, # foot.....28%
 Champion Extra Thin Back Cross Cuts, # foot.....31%
 One Man Champion Cross Cuts, # foot.....40%

Atkins' Circular Shingle and Heading dis 50¢	Hammer, Hotchkiss.....\$5.50, 10¢	Smith's Adjustable Milk Strainer. # dos \$2.00	Fence Staples, Galvanized. { Same price as B'rd Wire.
Atkins' Silver Steel Diamond X Cuts # foot 70¢	Hammer, Bemis & Call Co.'s #W Pat. 80¢55	Smith's Adjustable T. & C. Strainer. # dos. \$1.25	Fence Staples, Plain..... { See Trd. Rep.
Atkins' Special Steel Dexter X Cuts # foot 50¢	Bemis & Call Co.'s Lever and Spring Hammer.....30¢55	Staves, Wooden Rim— Iron. Plated.	Steelyards.....40¢10¢50¢
Atkins' Special Steel Diamond X Cuts # foot 50¢	Bemis & Call Co.'s Cross Cut Aiken's Genuine.....\$13.00, 50¢10¢	Mesh 18, Nested, # dos... 80¢ \$1.00	Stocks and Dies—
Atkins' Champion and Electric Tooth X Cuts.....# foot 30¢	Aiken's Imitation.....\$7.00, 55¢55	Mesh 20, Nested, # dos... 95¢ 1.10	Blacksmith's
Atkins' Hollow Back X Cuts.....# foot 20¢	Hart's Pat. Lever.....20¢	Mesh 24, Nested, # dos... \$1.15 1.25	Waterford Goods.....40¢10¢50¢
Atkins' Mill and Drag.....40¢	Leopold.....40¢10¢50¢		Butterfield's Goods.....40¢10¢50¢
Atkins' One-Man Saw, with handles. # foot 40¢	Atkin's Criterion.....# dos No. 1, \$6.00		Lightning Screw Plate.....25¢30¢
Peace Circular and Mill.....45¢	Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....40¢10¢		Reese's New Screw Plates.....35¢40¢45¢
Peace Hand Panel and Rip.....25¢	Avery's Saw Set and Punch.....50¢		Reversible Ratchet.....30¢
Peace Cross Cuts.....45¢	Chieftain H. R. Co.'s Superior..... # dos \$15, 50¢		Gardner.....25¢
Richardson's Circular and Mill.....45¢			Stops, Bench.
Richardson's X Cuts.....45¢			Morrill's.....# dos \$9, 50¢
Richardson's Hand, &c., Hand, Panel and Rip.....25¢			Hotchkiss's.....# dos \$5, 10¢10¢10¢
Back Saws—			Weston's, No. 1, \$10; No. 2, \$9, 25¢10¢55¢
Griffin's, complete.....40¢10¢50¢			McGill's.....# dos \$3.....10¢
Griffin's Hack Saw, Blades.....40¢10¢50¢			Cincinnati.....25¢10¢
Star Hack Saws and Blades.....25¢			
Eureka and Crescent.....25¢			
Scroll—			
Lester, complete, \$10.00.....25¢			
Rogers, complete, \$4.00.....25¢			
Barnes' Builders' and Cabinet Makers' \$16.....25¢			
Barnes' Scroll Saw Blades.....35¢			
Saw Frames—See Frames, Saw.			
Saw Sets—See Sets, Saw.			
Saw Tools—See Tools, Saw.			
Scales—			
Hatch, Counter, No. 171, good quality, # dos \$21.00			
Hatch, Tea, No. 161.....# dos \$6.75¢7.00			
Union Platform, Plain.....\$2.10¢2.20			
Union Platform, Striped.....\$2.40¢2.50			
Chatillon's Grocers' Trip Scales.....50¢			
Chatillon's Eureka.....25¢			
Chatillon's Favorite.....40¢			
Family, Turnbills.....30¢30¢10¢			
Riehle Bros.' Platform.....40¢			
Scale Beams—See Beams, Scale			
Scissors, Fluting.....45¢			
Scrapers—			
Adjustable Box Scraper (S. R. & L. Co.) #6.50.....30¢10¢			
Box, 1 Handle.....# dos \$4.00, 10¢			
Box, 2 Handle.....# dos \$6.00, 10¢			
Defiance Box and Ship.....50¢10¢60¢			
Foot.....# dos \$3.50 net			
Ship, Common.....# dos \$3.50 net			
Ship, R. I. Tool Co.....10¢			
Screen Window and Door Frames—See Frames.			
Screw Drivers—See Drivers, Screw.			
Screws.			
Bench and Hand—			
Bench, Iron.....55¢10¢55¢10¢10¢			
Bench, Wood, Hickory.....# dos \$2.25			
Bench, Wood, Hickory.....# dos \$2.25			
Hand, Wood.....20¢10¢			
Lag, Blunt Point, list Jan. 1, 1890, 75¢10¢			
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75¢75¢10¢			
Bed.....25¢55¢			
Hand Rail, Sargent's.....60¢¢10¢			
Hand Rail, H. & T. Mfg. Co.....70¢10¢75¢			
Hand Rail, Am. Screw Co.....75¢			
Jack Screws, Millers Falls list.....60¢50¢55¢			
Jack Screws, P. S. & W.....35¢			
Jack Screws Sargent's.....60¢10¢60¢10¢55¢			
Jack Screws Stearns.....40¢40¢10¢			
Cork—			
Humason & Becking Mfg. Co. 40¢10¢50¢			
Williamson's.....85¢¢35¢¢55¢			
Howe Bros. & Hulbert.....35¢			
Machine—			
Flat Head, Iron.....55¢			
Round Head, Iron.....50¢			
Wood—			
List January 1, 1891.			
Flat Head Iron.....72¢¢			
Round Head Iron.....67¢¢			
Flat Head Brass.....72¢¢			
Round Head Brass.....65¢			
Flat Head Bronze.....72¢¢			
Round Head Bronze.....65¢			
Rogers' Drive Screws.....83¢¢			
Scroll Saws—See Saws, Scroll.			
Scythes.			
Grain.....40¢5¢40¢10¢			
Grass.....40¢10¢50¢			
Scythe Snaths—See Snaths, Scythe.			
Sets.			
Awl and Tool.			
Aiken's Sets, Awls and Tools, No. 20, # dos \$10.00.....55¢10¢			
Fray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9.....25¢25¢10¢			
Miller's Falls Adj. Tool Hds., No. 1, \$12; 2, \$18.....25¢			
Henry's Combination Haft.....# dos \$6.50			
Brad Sets, No. 42, \$10.50; No. 43, \$12.50, 70¢10¢55¢			
Stanley's Excelsior: No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....30¢10¢			
Nail—			
Square.....# gr. \$4.00¢\$4.25			
Round.....# gr. \$3.25			
Buck Bros.....27¢¢			
Cannon's Diamond Point.....# gr. \$12, 20¢			
Rivet.			
Regular list.....50¢10¢			
Saw—			
Stillman's Genuine.....# dos \$5.00¢7.75			
Stillman's Imita.....# dos \$3.25¢5.25			
Common Lever.....# dos \$2.00, 40¢55¢			
Morrill's No. 1, \$15.00; No. 2, \$24.00, 40¢10¢50¢			
Lesch's, No. 0, \$5.75; No. 1, \$15, 15¢20¢			
Shavers, Spoke.			
Iron.....45¢			
Wood.....30¢			
Railley's (Stanley R. & L. Co.).....40¢40¢			
Stearns.....30¢10¢			
Cincinnati.....25¢10¢			
Shears—			
American (Cast) Iron.....75¢10¢75¢10¢55¢			
Barnard's Lamp Trimmers.....# dos \$3.75			
Tinners'.....20¢25¢			
Seymour's, list, Dec. 1881, 60¢10¢10¢60¢10¢10¢55¢			
Heinrich's, list, Dec. 1881, 60¢10¢10¢60¢10¢10¢55¢			
Heinrich's Tailor's Shears.....35¢			
First quality C. S. Trimmers.....80¢80¢10¢			
Second quality C. S. Trimmers.....80¢10¢80¢10¢10¢55¢			
Acme Cast Shears.....10¢10¢			
Diamond Cast Shears.....10¢			
Clipper.....10¢10¢			
Victor Cast Shears.....75¢10¢75¢10¢55¢			
Howe Bros. & Hulbert, Solid Forged Steel.....40¢			
Chicago Drop Forge & P. Co., Solid Steel Forged.....60¢			
Clausen Shear Co., Japaned.....70¢			
Clausen Shear Co., Nickel, same list. 60¢			
Galvanic, 3½ to 9 in, # dos, \$1.00 # inch			
Pruning Shears and Hooks.			
Diston's Combined Pruning Hook and Saw.....# dos \$18.00, 20¢10¢			
Diston's Pruning Hook, # dos \$12.00, 20¢10¢			
E. S. Lee & Co.'s Pruning Tools.....40¢			
Pruning Shears, Henry's Pat, # dos \$5.75¢4.00			
Henry's Pruning Shears, # dos \$4.25¢4.50			
Wheeler, M. & C. Co.'s Combination, # dos \$12.00, 20¢			
Dunlap's Saw and Chisel, # dos \$8.50, 30¢			
J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25 P. S. & W. Co.....60¢			
Tinners', &c.—			
Shears and Snips (P. S. & W.).....30¢25¢			
Snips, J. Mallinson & Co.....35¢			
Sheaves—			
Sliding Door—			
M. W. Co., list July, 1888.....50¢10¢60¢55¢			
R. & E., list Dec. 18, 1888.....55¢20¢			
Corbin's list.....60¢10¢25¢			
Patent Roller.....60¢10¢25¢			
Patent Roller, Hatfield's.....75¢			
Russell's Anti-Friction, list Dec. 18, 1888.....60¢25¢			
Moore's Anti-Friction.....50¢			
Sliding Shutter—			
R. & E., list Dec. 18, 1888.....60¢10¢25¢			
Sargent's list.....60¢10¢			
Reading list.....60¢10¢10¢			
Ship Tools—			
L. & J. J. White.....20¢55¢			
Shoes, Horse, Mule, &c.—			
Horse—			
Burden's, Perkins', Phoenix, at factory, \$4.00			
Mule—			
Add \$1 # keg to above prices.			
Ox, Wrought—			
Ton lots.....# 9¢			
1000 lb lots.....# 9¢			
500 lb lots.....# 10¢			
Shot—			
Drop, up 'o BB, 25-lb bag, \$1.35.....\$1.37			
Drop, up to BB, 5-lb bag......35			
Drop, BB and larger, 20-lb bag.....1.57			
Drop, BB and larger, 5-lb bag......40			
Buck and Chilled, 25-lb bag 1.57.....1.62			
Buck and Chilled, 5-lb bag .40......41			
Dust Shot, 25-lb bag.....2.00			
Dust Shot, 5-lb bag......45			
Shovels and Spades—			
Amos' Shovels, Spades, &c., list Nov. 1, 1888.....20¢			
Note.—Jobbers frequently give 5¢7½¢ extra on above.			
Griffith's Black Iron.....50¢10¢			
Griffith's C. S.....60¢60¢10¢			
Griffith's Solid C. S. R. R. Goods.....20¢			
St. Louis Shovel Co.....20¢20¢7½¢			
Hussey, Binns & Co.....15¢25¢			
Hubbard & Co.....20¢20¢7½¢			
Lehigh Mfg. Co.....50¢10¢			
H. M. Myers Co.....30¢			
Payne Pettibone & Son.....35¢55¢			
Remington's Lowman's Pat. 30¢10¢40¢			
Rowland's, Black Iron.....50¢10¢			
Rowland's Steel.....60¢55¢60¢10¢			
Shovels and Tongs—			
Iron Head.....60¢10¢60¢10¢55¢			
Brass Head.....60¢10¢10¢			
Sieves—			
Mann's Tin Rim.....50¢25¢			
Buffalo Metallic, S. S. & Co.....50¢25¢			
Shaker (Barier's Pat.) Flour Sifters..... # dos \$2.00; # gr \$21.00			
Electric.....# dos \$2.00			
A. & W. Sifters.....# dos \$2.00			
Hunter's.....# dos \$2.00			
Smith's Adjustable Sifters.....# dos \$2.00			
Smith's Adjustable Milk Strainer. # dos \$2.00			
Smith's Adjustable T. & C. Strainer. # dos. \$1.25			
Staves, Wooden Rim— Iron. Plated.			
Mesh 18, Nested, # dos... 80¢ \$1.00			
Mesh 20, Nested, # dos... 95¢ 1.10			
Mesh 24, Nested, # dos... \$1.15 1.25			
Skains, Thimble—			
Western list.....75¢50¢75¢10¢			
Columbus Wrt. Steel. Special net price— Coldbrookdale Iron Co.....60¢			
Seneca Falls Pattern.....60¢			
Ulrich P. S. T. Skains.....60¢			
Utica Turned and Fitted.....35¢			
Slates—			
School, by case.....50¢10¢50¢10¢10¢			
Snaps, Harness, &c.—			
Anchor (T. & S. Mfg. Co.).....65¢			
Fitch's (Bristol).....50¢10¢			
Hotchkiss.....10¢			
Andrews.....50¢			
Sargent's Patent Guarded.....70¢10¢10¢			
German, new list.....40¢10¢			
Covert, New Patent.....50¢25¢			
Covert, New R. E.....60¢25¢			
Covered Spring.....60¢10¢10¢			
Snaths, Scythe.			
List.....50¢10¢50¢10¢55¢			
Soldering Irons—See Irons, Solder- ing.			
Spittoons, Cuspidors, &c.			
Standard Fiberglass—			
Cuspidors, 8½-inch, # dos., No. 5, \$8; No. 6, \$9.			
Spittoons, Daisy, 8-inch, No. 1, \$4; 10 and 11 inch, \$6.			
Spoke Shavers—See Shavers, Spoke.			
Spoke Trimmers—See Trimmers, Spoke.			
Spoons and Forks—			
Tinned Iron—			
Basting, Cen. Stamp. Co.'s list.....70¢10¢			
Solid Table and Tea, Cen. Stamp. Co.'s list.....70¢10¢			
Buffalo S. S. & Co.....33½¢25¢			
Silver-Plated—(4 mos. or 5¢ cash 30 days).			
Meriden Brit. Co., Rogers.....40¢15¢			
C. Rogers & Bros.....40¢15¢			
Rogers & Bros.....40¢15¢			
Reed & Barton.....40¢40¢55¢			
Wm. Rogers Mfg. Co.....40, 15¢55¢			
Simpson, Hall, Miller & Co.....40, 15¢55¢			
Boime & Edwards Silver Co.....40, 15¢55¢			
L. Boardman & Son.....50¢12½¢			
Miscellaneous.			
Holmes & Edwards Silver Co.: No. 30 Silver Metal.....50¢10¢55¢			
No. 30 Silver Metal.....50¢10¢55¢			
No. 24 German Silver.....50¢10¢55¢			
No. 50 Nickel Silver.....50¢10¢55¢			
No. 49 Nickel Silver.....50¢10¢55¢			
Wm. Rogers Mfg. Co. Rogers' Silver Metal.....50, 10¢65¢			
18½ Rogers' German Silver.....60¢65¢			
22½ Rogers' Nickel Silver.....50¢65¢			
German Silver.....50¢65¢			
German Silver, Hall & Elton, 50¢55¢ cash Nickel Silver.....50¢55¢50¢10¢55¢ cash			
Britannia.....60¢			
Boardman's N'ck'l Silver 40¢7½¢55¢ cash			
Boardman's Britannia Spoons, case lots.....50¢12½¢55¢ cash			
Springs—			
Door—			
Torrey's Rod, regular size.....# dos \$1.30			
Gray's, # gr. \$20.00.....30¢			
Bee Rod # gr. \$30.00.....30¢			
Warner's No. 1, # dos, \$2.50; No. 2, \$3.30.....40¢10¢50¢			
Gen. (Coll), list April 10, 1886.....10¢			
Star (Coll), list April 10, 1886.....25¢			
Victor (Coll).....60¢60¢10¢			
Champion (Coll).....60¢10¢60¢10¢10¢			
Philadelphia, 5 in., \$5.00; 8 in., \$7.75. # Cowell's, No. 1, # dos, \$18.00; No. 2, \$15.00.....50¢			
Rubber, complete, # dos, \$4.50.....55¢10¢			
Herules.....50¢			
Shaw Door Check and Spring 35¢30¢35¢			
Carriage, Wagon, &c.—			
Elliptic, Concord, Platform and Rail Scroll.....60¢10¢10¢			
Cliff's Bolster Springs.....25¢			
Squares—			
Steel and Iron.....}.....80¢10¢			
Nickel-Plated.....}.....80¢10¢			
Try Square and T Bevels.....60¢10¢60¢10¢			
Diston's Try Square and T Bevels.....50¢			
Winterbottom's Try and Miter.....30¢10¢			
Starrett's Micrometer Caliper Squares.....25¢			
Avery's Flush Bevel Squares.....40¢			
Avery's Bevel Protractor.....50¢			
Squeezers.			
Fodder—			
Blair's.....# dos \$2.00			
Blair's "Climax".....# dos \$1.25			
Lemon—			
Porcelain Lined, No. 1.....# dos \$6.00, 25¢30¢			
Wood, No. 2.....# dos \$2.00, 35¢			
Wood, Common.....# dos \$1.70¢1.75			
Dunlap's Improved.....# dos \$3.75, 20¢			
Sammis, No. 1, \$5.00; No. 2, \$9; 12, \$18 # dos.....25¢10¢			
Jennings' Star.....# dos \$2.50			
The Boss.....# dos \$2.50			
Dean's, Nos. 1, # dos \$6.50; 2, \$5.35; 3, \$4.90; Queen, \$2.50.....50¢50¢55¢			
King.....40¢55¢			
Hotchkiss Straight Flash.....# dos \$12.00			
Silver & Co., Glass.....# gro. \$9.00			
Standard Fiber Ware—See Ware, Standard Fiber.			
Staples.			
Blind—			
Barbed, ½ in. and larger.....# 7¢7½¢			
Barbed, ¾ in. and larger.....# 8¢8			

CURRENT METAL PRICES.

MARCH 25, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
1 to 4 in. round and square.	2.00 @ 2.10
1 to 6 in. x 1/2 to 1 in.	2.00 @ 2.10
Refined Iron:	
1 to 4 in. round and square.	2.10 @ 2.30
1 to 6 in. x 1/2 to 1 in.	2.10 @ 2.30
1 to 6 in. x 1/2 and 5-16.	2.30 @ 2.50
Rods—1/2 and 1-16 round and sq.	2.20 @ 2.40
Bands—1 to 6 x 3-16 to No. 12.	2.40 @ 2.60
"Burden Best" Iron, base price.	3.00
Burden's "H. B. & S." Iron, base price.	2.80
"Claster"	3.00
Norway Bars	4.00
Norway Shapes	5.00

Merchant Steel from Store.

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.	2 3/4
Best Cast Steel, base price in small lots	3
Best Cast Steel Machinery, base price in small lots.	5

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16.	2.00 @ 3.00	3.35	3.75
17 to 20.	3.15 @ 3.25	3.35	3.75
21 to 24.	3.35 @ 3.35	3.60	3.75
25 and 26.	3.35 @ 3.35	3.60	3.75
27.	3.50 @ 3.65	3.85	3.75
28.	3.65 @ 3.65	4.10	3.75
Galv'd, 14 to 20.	4.75 @ 4.75	4.60	2d qual.
Galv'd, 21 to 24.	5.12 @ 5.12	5.00	2d qual.
Galv'd, 25 to 26.	5.50 @ 5.50	5.35	2d qual.
Galv'd, 27.	5.90 @ 5.90	5.70	2d qual.
Galv'd, 28.	6.35 @ 6.35	6.10	2d qual.
Patent Finished.	10 @ 10	11	11
Russia.	10 @ 10	11	11
American Cold Rolled B. B.	10 @ 10	11	11
Orag Polished Sheet Steel.	10 @ 10	11	11

English Steel from Store.

Best Cast	15 @ 15
Extra Cast	16 @ 16
Swaged, Cast	17 @ 17
Best Double Shear	18 @ 18
Blister, 1st quality	19 @ 19
German Steel, Best	20 @ 20
2d quality	21 @ 21
3d quality	22 @ 22
Sheet Cast Steel, 1st quality	23 @ 23
2d quality	24 @ 24
3d quality	25 @ 25
R. Muehler's "Special"	26 @ 26
"Titanic"	27 @ 27

METALS.

Tin.

Banca, Pig.	23 1/2
Straits, Pig.	21 1/4 @ 22
Straits in Bars	24

Tin Plates.

	Charcoal Plates.—Bright.	Per box.
Melny Grade.	IC, 10 x 14.	6.65
"	IC, 12 x 12.	6.90
"	IC, 14 x 10.	6.65
"	IC, 20 x 28.	13.50
"	IX, 10 x 14.	8.15
"	IX, 12 x 12.	8.40
"	IX, 14 x 10.	8.15
"	IX, 20 x 28.	16.85
"	DC, 12 1/2 x 17.	6.15
"	DX, 12 1/2 x 17.	7.65
Oakland Grade.	IC, 10 x 14.	6.65
"	IC, 12 x 12.	6.90
"	IC, 14 x 10.	6.65
"	IX, 10 x 14.	7.80
"	IX, 12 x 12.	8.10
"	IX, 14 x 10.	7.90
Alway Grade.	IC, 10 x 14.	6.15
"	IC, 12 x 12.	6.30
"	IC, 14 x 10.	6.15
"	IX, 10 x 14.	7.30
"	IX, 12 x 12.	7.60
"	IX, 14 x 10.	7.30
"	IX, 20 x 28.	14.0
"	DC, 12 1/2 x 17.	5.80
"	DX, 12 1/2 x 17.	6.80

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20.	5.85
10 x 30.	8.00
30 x 28.	11.0
IX, 10 x 14, 14 x 20.	6.75
SV Grade.—IC, 10 x 14, 14 x 20.	5.85

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20.	5.50
30 x 28.	10.90
IX, 14 x 20.	6.25
30 x 28.	12.85
Abecarne Grade.—IC, 14 x 20.	5.35
30 x 28.	10.60
IX, 14 x 20.	6.35
30 x 28.	12.35

Tin Boiler Plates.

IX, 14 x 26.	112 sheets.	13.50
IX, 14 x 26.	112 sheets.	13.75
IX, 14 x 31.	112 sheets.	15.25

Copper.

Duty: Pig, Bar and Ingot, 1 1/4¢; Old Copper, 1¢
B. Manufactured (including all articles of
which Copper is a component of chief value),
3 1/2¢ ad valorem.

Ingot.

Lake.	15 1/4¢
Baltimore Grade.	13 1/4¢

Sheet and Bolt.

Prices adopted by the Association of Copper
Manufacturers of the United States, December
5, 1890, being quotations for all sized lots.

	Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound.
	Over 64 oz.	22 to 24 oz.	16 to 22 oz.	14 to 16 oz.
30-72	22	22	22	23
30-96	22	22	22	23
36-96	22	22	22	23
48-96	22	22	22	23
48-96	22	22	22	23
60-96	22	22	22	23
60-96	22	22	22	23
64-96	22	22	22	23
64-96	22	22	22	23
Over 84 in wide	25	27		

All Bath Tub Sheets.... 16 oz. 14 oz. 12 oz. 10 oz.
Per pound..... 30.37 0.29 0.31 0.35
Bolt Copper, 1/2 inch diameter and over, per
pound..... 22 1/2
Circles, 60 inches in diameter and less, 3 cents
per pound advance over lowest prices of Sheet
Copper of the same thickness.

Copper Bottoms, Pits and Flats.

14 ounce to square foot and heavier..... 20¢
12 ounce and up to 14 ounce to square foot..... 27¢
10 ounce and up to 12 ounce..... 29¢
Lighter than 10 ounce..... 32¢
Circles less than 8 inches diameter 2 cents per
pound additional.
Circles over 8 inches diameter are not classed
as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48
each..... 8¢
Tinning sheets on one side, 30 x 60 each..... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60
in.), each..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56
in.), each..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52
in.) each..... 12¢
Tinning sheets on one side, other sizes, per
square foot..... 2 1/2¢
For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48, 14 x 52, 14 x 56, 14 x 60 in.
14 and 16 oz. and heavier..... 32¢ By the case... 34¢
12 oz. and lighter..... 36¢ By the case... 34¢
14 and 16 oz. and heavier..... 36¢ 12 oz..... 30¢

Seamless Brass and Copper Tubes.

O. G.	N. G.	%	%	%	%	1	1 1/2
8-15	6-12	37	38	30	29	27	24
15	13	38	34	31	30	29	25
16	14	39	34	32	31	30	25
17	15	40	35	33	30	31	26
18	16	42	36	34	32	31	27
19	17	43	37	35	34	32	29
20	18-19	44	39	37	36	35	31
21	20	45	41	39	38	37	34
22	21	46	42	40	39	38	37
23	22	48	44	42	41	40	39
24	23	50	46	44	43	41	40
25	24	52	48	46	45	44	43

Copper Bronze and Gilding Tube, 3¢ per additional.

Brass Tubing. (To No. 20, inclusive.)

Above 5-16 inch to 3 inch, inclusive..... 35¢
Plain, above 3 inch..... 45¢
Plain, 5-16 inch..... 45¢
Plain, 1/2 inch..... 45¢
Plain, 3-16 inch..... 45¢
Fancy Tubing, Brass, to No. 20, inclusive..... 1.5¢
Bronze Tubing, 3¢ per additional.
Discount from list..... 25¢

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass:	in.	in.	in.	in.	in.	in.	in.
Wider than	10	12	14	16	18	20	22
and including	10	12	14	16	18	20	22
To No. 20, inclusive.	21	22	23	25	27	29	31
Nos. 21, 22, 23 and 24.	22	23	24	26	28	30	32
Nos. 25 and 26.	23	24	25	27	29	31	33
Nos. 27 and 28.	23	24	25	28	30	32	34

Common High Brass:	in.	in.	in.	in.	in.	in.	in.
Wider than	24	26	28	30	32	34	36
and including	26	28	30	32	34	36	40
To No. 20, inclusive.	36	39	42	46	50	55	60
Nos. 21, 22, 23 and 24.	37	40	43	47	51	56	61
Nos. 25 and 26.	38	41	44	48	52	57	62
Nos. 27 and 28.	39	42	45	49	53	58	63

Brass and Copper Wire.

Old English gauge standard.	Com. high brass.	Low brass.	Gild'g brass & copper.
Per lb.	Per lb.	Per lb.	Per lb.
All Nos. to No. 16, inclusive.	\$0.22	\$0.26	\$0.39
No. 17 and No. 18.	.23	.27	.31
No. 19 " 20.	.24	.28	.32
No. 21.	.25	.29	.33
No. 22.	.26	.30	.34
No. 23.	.28	.32	.36
No. 24.	.30	.34	.38
No. 25.	.32	.36	.40
No. 26.	.35	.39	.43
No. 27.	.38	.42	.46
No. 28.	.42	.46	.51
No. 29.	.45	.49	.54
No. 30.	.48	.52	.57
No. 31.	.51	.55	.57
No. 32.	.55	.59	.73
No. 33.	.59	.63	.82
No. 34.	.64	.68	.85
No. 35.	.70	.74	1.30
No. 36.	.76	.80	1.50
No. 37.	1.00	1.04	1.70
No. 38.	1.30	1.34	2.00
No. 39.	2.00	2.00	3.25
No. 40.	2.60	2.60	5.75

Spring Wire, 2¢ per advance.

Copper Belt and Hose Rivets and Burrs.	Per lb.	Per lb.
No. 5.	40¢	No. 11..... 55¢
No. 6.	40¢	No. 12..... 58¢
No. 7.	40¢	No. 13..... 60¢
No. 8.	50¢	No. 14..... 65¢
No. 9.	52¢	No. 15..... 70¢
No. 10.	54¢	

Tobin Bronze—Rods.

1 1/2 inch and smaller..... 10¢ per lb., net
1 1/2 to 2 1/2 inch..... 2 1/2¢ per lb., net
2 1/2 inch and larger..... 2 1/2¢ per lb., net

Tobin Bronze—Piston Rods.

1 1/2 inch and smaller..... 20¢ per lb., net
1 1/2 to 2 1/2 inch..... 2 1/2¢ per lb., net
2 1/2 inch and larger..... 2 1/2¢ per lb., net

Spelter.

Duty: Pig, Bars and Plates, \$1.50 per 100 lb.
Western Spelter..... 5 1/2¢ @ 6 1/4¢
Bertha (pure)..... 5 1/2¢ @ 9 ¢

Zinc.

Duty: Sheet, 3 1/2¢ per lb.
600 lb casks..... 6 1/2¢
Per lb..... 7 1/2¢

Lead.

Duty: Pig, 3¢ per 100 lb. Old Lead, 2¢ per lb. Pipe
and Sheets, 3 1/2¢ per lb.
American..... 4 1/2¢
Bar..... 5 ¢ @ 5 1/4¢
Pipe, subject to trade discount..... 7 1/4¢
Tin-Lined Pipe, subject to trade discount..... 10¢
Block Tin Pipes, subject to trade discount..... 32¢
Sheet, subject to trade discount..... 8¢

Solder.

1/2 @ 1/2 (Guaranteed)..... 16¢
No. 1..... 13¢
Extra Wiping..... 11 1/2¢ @ 16¢
The prices of the many other qualities of Solder
in the market indicated by private brands vary
according to composition.

Antimony.

Cookson..... 18 1/4¢ @ 19 ¢
Hallett's..... 17 1/4¢

ALUMINUM.

Prices in Ingots.

In lots of 2000 lb and over..... \$1.00

Old Metals.

(Prices Paid in New York.)

Heavy Copper..... 12 ¢
Light Copper..... 11 ¢
Heavy Brass..... 10 ¢
Light Brass..... 8 ¢
Lead..... 4 ¢
Tea Lead..... 3 1/2 ¢
Zinc..... 8 ¢
No. 1 Pewter..... 18 ¢
No. 2 Pewter..... 19 ¢
Wrought Scrap Iron..... gross ton \$19.00
Heavy Cast Scrap..... gross ton 12.00
Stove Plate Scrap..... gross ton 18.00
Burnt Iron..... gross ton 6.00